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CONTENTS

Practice management courses—DeRevere 493
Treatment of limited mandibular movement—Schwartz 497
Occlusal surfaces and stability of dentures—Ledley 508
Traumatic occlusion and mandible repositioning—Ogle 527
Effect of penicillin and calcium carbonate on pulps—Seelig 532
Reports of councils and bureaus 538
Cases and comments 570
Editorials 572
Report on Russian dental education 576
Washington news letter 578
News of dentistry 579
International correspondence 597
The reader comments 599
Book reviews 600
Current literature 605
Deaths 610
Directory 614
Announcements 616

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VOLUME 48

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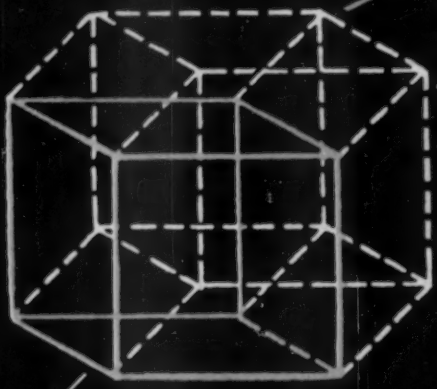

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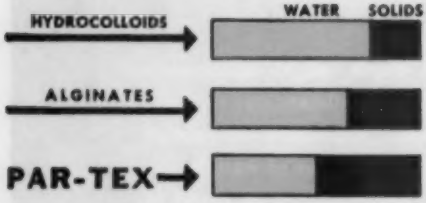

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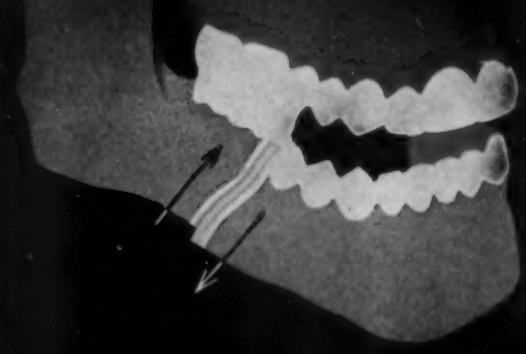

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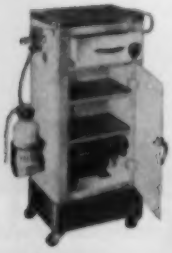

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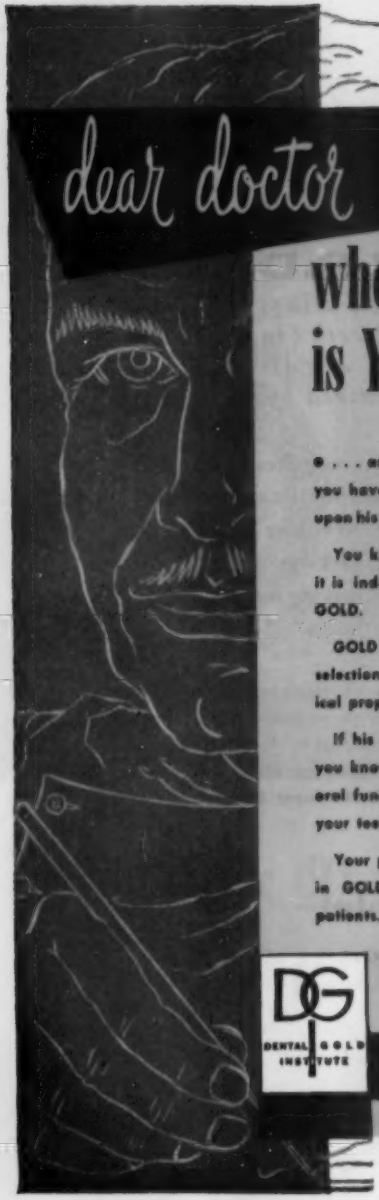

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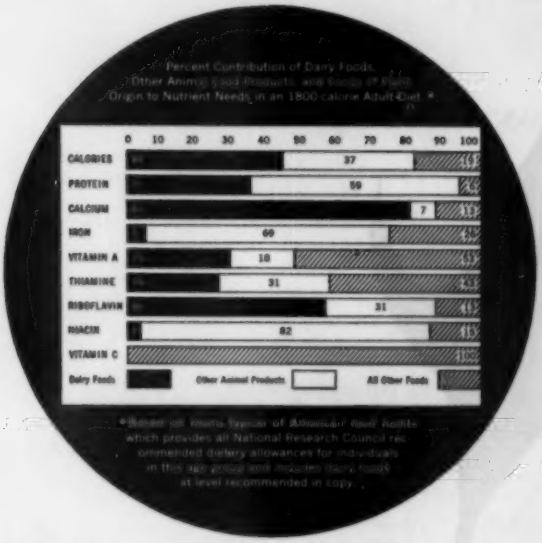
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1. Weight Reduction Through Diet. Chicago: National Dairy Council, 1951.

2. Young, C. M. Weight reduction using a moderate fat diet. I. Clinical responses and energy metabolism. J. Am. Diet. Assn. *28*:410 (May) 1952.

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MAY 1954 VOLUME 48 • NUMBER 5

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

Contribution of the dentist in private practice to practice management courses for undergraduates

Robert E. DeRevere, D.D.S., and Lester W. Burket,† D.D.S., M.D., Philadelphia*

Most practicing dentists can recall the difficult period of adjustment between their supervised clinical experience in the dental school and the eventual establishment of their practice. Even though they may have had excellent lecture courses in practice management, when they were recent graduates they still had only a vague idea of the actual operation of a dental office. The successful practitioner usually has bridged this gap by trial and error.

The suggestion was made that many problems in practice management encountered by the recent graduate could be simplified if the students about to graduate were assigned to selected dental offices as observers for a few morning or afternoon sessions. This period of observation would permit the future dentist to have firsthand knowledge of a private dental practice in operation. The student could see how patients are greeted, how the subject of fees is presented; he could learn how much time is required by a skilled operator for the various operations; he could expand his limited knowledge of record keeping, filing and other important business aspects of a dental practice.

The advantages of such a plan would not be one-sided; for his part, the participating dentist without leaving his office would have the opportunity of learning the latest developments currently taught at the dental schools.

After a thorough discussion of a plan submitted to the faculty of the School of Dentistry, University of Pennsylvania, the decision was made to undertake a pilot program for graduating students. A faculty advisor was appointed to expedite

*Assistant professor of operative dentistry, School of Dentistry, University of Pennsylvania.

†Dean, School of Dentistry, University of Pennsylvania.

the program and to serve as liaison between the school and the private practitioners. Participation was restricted to those seniors who had completed their clinical requirements. Since the program was thus limited to 32 qualified volunteers from a class of 132, the routine of the clinic was not disturbed; however, the volunteer registration was not closed at that time.

SELECTION OF DENTISTS

It was realized that the success of this plan would depend on the selection of dentists and their cooperation. Therefore, it was decided to limit the participating dentists to alumni in the Philadelphia area who were known to have a sincere interest in the advancement of dental education and dental practice and whose offices were suitable for the objectives of this plan.

Part-time faculty members were not considered for participation in the program, first, because they were already devoting a portion of their time to teaching and second, because it did not seem advisable to give students an opportunity to pass judgment on the practices of these practitioners.

A letter outlining the general idea of the plan was sent by the dean to the 33 dentists selected. In this letter it was stressed that the student was to be a silent observer. The dentist was advised that the student could be excused if a patient desired privacy, that in periods of time devoted to such patients, the student could observe the work of the secretary, the hygienist or the laboratory technician. The dentists interested were invited as guests to a dinner at which further details of the program were to be presented.

STUDENT PARTICIPATION IN PLANS

The student volunteers held a meeting at which they suggested the general topics which they would like to have covered during their visits to the dentists' offices. They submitted the following list of topics to the faculty advisor:

1. Length of appointments.
2. Handling of emergency patients.
3. Handling of new patients and treatment planning.
4. Presentation of treatment plan to patient; health education of patient.
5. Types of patient's records in use.
6. Types of office records in use.
7. Use of auxiliary personnel.
8. Inventory and ordering of supplies.
9. Use of dental laboratories.

INSTRUCTIONS TO PARTICIPATING DENTISTS AND STUDENTS

This list was sent to the selected dentists along with an assignment form to be filled out by the dentist if he decided to participate in the program. On the assignment form, he indicated the date he would like his first observer and a time schedule for him. All 33 dentists selected expressed the opinion that the plan was worth while; 17 dentists returned the forms and declared their desire to cooperate in the plan.

The faculty advisor, realizing that in the private office the dentist-patient relationship often centers about the personality of the dentist, wished to make sure that participation in this plan should not disturb such a relationship, developed over many years. Before their assignments, therefore, the students were thoroughly briefed by their faculty advisor on their professional attitude in the dentists' offices. It was stressed that the student was the guest of the dentist in his office and that each student should conduct himself accordingly, that he should concern himself more with the topics requested for study than with technical

operations or services performed by the dentist. It was pointed out further that this was an experiment and that the success of the program depended on the attitude and actions of the students. Neatness and punctuality were stressed. The students were cautioned not to ask questions in the presence of patients unless they were encouraged to do so by the dentist.

The offices of the participating dentists represented various types of practice, both in the center of the city and in the suburbs. The specialist provided the student planning to specialize the advantage of spending his in-service training in a specialist's office and thus of securing a better basis for undertaking his graduate study.

ASSIGNMENT TO DENTISTS

An effort was made to assign each student to the location and type of practice he preferred for a full week on the schedule suggested by the dentist. A form letter was sent to each dentist indicating the time the assigned student would arrive; he was informed also that the student would wear a clean white coat. A copy of the form letter was given to each student also. Because there were more volunteer students than participating dentists, the practitioners graciously accepted the assignment of a second student.

REPORT OF STUDENTS ON PROGRAM

A meeting was held after the students returned from the initial assignments; the students concluded that in some offices a five-day period was too long. They decided that two or three days was the optimum time to spend in most offices to attain the objectives of the program. It was decided, therefore, that the second group of students should be assigned for two days and that these students likewise should evaluate the length of time. The final conclusion was that the length of the visit should depend on the individual office, since some offices had more to offer than others and so required more of the student's time. The optimum time for the average office was estimated as three days. In the future, there will be only a few offices where students will be assigned for a longer or shorter period, depending on the office. Experience will determine the length of time for each office.

REPORT OF PARTICIPATING DENTISTS

Near the end of a student's assigned period, each participating dentist received a one-page multiple-choice questionnaire containing an inquiry as to the student's deportment and the following three questions:

1. What is your initial reaction to this program?

2. If you had an opportunity for discussion with the student, what phase of the student's dental education appeared to require greater emphasis?

3. Do you have any other comments about the student assigned to you?

The answers to these questions revealed the enthusiasm of the participating dentists. The dentists reported that the students received considerable practical information from their visits. They found the educational aspects of the program mutually interesting and stimulating. Many felt that the program should be expanded to give more dentists the opportunity of instructing the students in the results of their many years of experience in practice management. The dentists thought that they had exerted a considerable influence on the development of the students fortunate enough to have been assigned to their offices.

In response to the second question, the participating dentists noted aspects of the school curriculum which they felt could

be improved and offered suggestions of ways to overcome what they considered possible deficiencies.

REACTIONS OF STUDENTS AND DENTISTS

The students reported that many dentists had volunteered information on additional topics not on the list, for instance, the determination of an adequate fee and its adjustment in deserving cases. The students were pleasantly surprised with the willingness of the dentists to explain and demonstrate their methods of bookkeeping, presentation of fees and plans of patient management. The students were of the opinion that the time spent with the dentist was one of the most profitable phases of their entire undergraduate education.

After the first assignees returned from the offices, a large number of their classmates who had not volunteered originally requested an opportunity for assignment to a dentist's office. All the students who participated in the program advised that a similar opportunity should be given the next class.

An item on the lighter side is that many dentists feted the students quite royally. Participating dentists voluntarily took the students out to lunch—at private clubs, at service clubs, a few even in their homes. Thus the dentists introduced the students to their colleagues and associates and provided the students with an insight into the way dentists live.

REACTION OF FACULTY TO EXPERIMENT

The faculty of the dental school realizes that the time and effort expended by the participating dentists to carry out their part of the program represented a real sacrifice. It is hoped that these professional men will continue to offer their facilities to develop this plan on a wider scale. It is contemplated that those dentists who show a continued interest during the expansion of this program will receive faculty status in recognition of their efforts.

PLANS FOR FUTURE COURSES

The plan for the coming year is for a gradual expansion of the present arrangement. More dentists will be needed. Selected dentists from an area extending 75 miles around Philadelphia will be invited to participate, so that there will be a wider range of types of dental practice and more students will be able to have experience in a dental office of their choice. The dates of assignments and locations of dental offices will be posted, and each student will register his choice. The program will be initiated earlier in the fourth year to take advantage of Christmas and Easter holidays. By previous arrangement, students returning home for the holidays in many cases will be able to visit selected dentists in their home town.

SUMMARY

The cooperative program in which students, interested practicing dentists and faculty members participated proved to be of mutual benefit to all taking part. Through conversation with the student assigned to him, the practicing dentist became more aware of new developments in education. He found it intellectually stimulating to learn of the improvements in methods and subjects taught at the School of Dentistry. The program gave the dentist an occasion to demonstrate the accomplishments required for a successful practice. The dentist welcomed the opportunity to pass his experience on to those who could best profit by it. Above all, the participating dentist felt gratified that he had contributed something toward the solution of one of the major problems of dental education, that of teaching the student how to get a successful practice started.

Ethyl chloride treatment of limited, painful mandibular movement

L. Laszlo Schwartz, D.D.S., New York

Limitation of movement of the mandible is a fairly common disorder. It is always disturbing to the patient, occasionally a serious symptom, and invariably difficult to treat.

In the literature all types of limitation of mandibular movement are spoken of as either ankylosis or trismus. If the term "ankylosis" is used, it usually is subdivided into true or intra-articular ankylosis and false or extra-articular ankylosis. The first is considered permanent; the second—temporary. True ankylosis has been described as:[1]

> . . . abnormal immobility caused by consolidation of the joint, and false ankylosis . . . caused by the rigidity of the surrounding parts.

Although the term "trismus" is often used loosely to denote any limitation of mandibular movement, it more specifically refers to a

> motor disturbance of the trigeminal nerve, especially spasm of the masticatory muscles, with difficulty in opening the mouth (lockjaw); a characteristic early symptom of tetanus.[2]

Regardless of nomenclature, limitation of mandibular movement may result from a disorder either of the temporomandibular joints, the mandible, or the neuromuscular mechanism that moves and controls it.

Twenty-seven of the 256 patients examined at the Temporomandibular Joint Clinic gave limitation of mandibular movement as the chief complaint. In all but 7 patients of the 27 studied, muscle spasm was believed to be the cause of the limitation. Condylar fractures were responsible in three cases. One was caused by a neoplasm involving the temporomandibular joint. Three were believed to be related to the rheumatoid arthritis with which these patients were afflicted. In addition to this group of 27, limitation was also found to be prevalent among 199 patients whose chief complaint was pain.

This paper will be confined to a consideration of limited mandibular movement caused by muscle spasm.

DIFFERENTIAL DIAGNOSIS

The appearance of limitation of movement of the mandible, especially in the

The investigations reported here were conducted by the Temporomandibular Joint Clinic of the division of clinical oral physiology under the direction of L. Laszlo Schwartz with the cooperation of Lewis R. Stowe and Barnet M. Levy, School of Dental and Oral Surgery, and of the following departments of the Columbia-Presbyterian Medical Center: anesthesiology, Daniel P. Tausig; medicine, Charles A. Ragan, Jr.; otolaryngology, Jules J. Waltner; orthopedic surgery, Charles T. Ryder; neurological surgery, James B. Campbell; psychiatry, Max Cohen, Ruth E. Moulton; radiology, Juan M. Taveras, Josephine Wells; surgery, Stanley L. Lane.

Division of clinical oral physiology, School of Dental and Oral Surgery, Faculty of Medicine, Columbia University, and the dental service of the Presbyterian Hospital.

1. Mead, S. V. Oral surgery. St. Louis, C. V. Mosby Co., 1934, p. 661.

2. Dorland, W. A. N. The American illustrated medical dictionary, ed. 22. Philadelphia, W. B. Saunders Co. 1951, p. 1621.

absence of a history of trauma of sufficient severity to cause fracture, always suggests the possibility of muscle spasm. The factor associated with the onset of limitation may vary—for example, a yawn, a wide bite, or an oral operation. Palpation of the condyle through the external auditory meatus in such instances discloses that the condyles may rotate but do not move forward to any extent out of the glenoid fossae. Palpation of the masseter and internal pterygoid muscles may reveal the presence of spasm. These muscles often are found to be tender. Pressure sometimes causes pain which is referred elsewhere, often to temporomandibular joint regions. Pain is an invariable concomitant of limitation in the sense that an attempt to increase opening, either voluntarily or forcibly, causes pain.

Limitation of movement of long duration does not preclude the possibility of muscle spasm. Roentgenographic examination, though not conclusive in itself, is an essential adjunct in diagnosis. In order to deal effectively with muscle spasm, an understanding of the physiology of mandibular movement was found to be indispensable.

PHYSIOLOGY OF MANDIBULAR MOVEMENT

The movement of the mandible, as part of the system for human motion and locomotion, is accomplished by the action of a system of muscles (force) against a bone (lever) about joints (fulcrum). It is important to bear in mind that these parallels are figures of speech and not mechanical counterparts. Each organ and its integrated action with others is much more complex than the most complicated machine. This is especially true of the masticatory or stomatognathic system, as it is called, whose order and disorder are extremely complex.

The temporomandibular joints, attached as they are to the ends of a unique U-shaped bone, are the only system of double joints in the human body, neither of which can act without the other. They are unusual in other respects. Since they are hanging joints, they permit the mandible an extremely wide range of movement through their ability to turn in practically all directions as they glide. In addition, the condyles serve an important role as growth centers for the mandible; yet it is possible to remove parts and even the temporomandibular joints in their entirety, except during the growth period, without destroying function. The surgical treatment for bony ankylosis aims to improve function by eliminating the defective joint. It can thus be seen that the temporomandibular joints play a passive role in movement. Unlike many joints in the human body they are not indispensable for function.

Only muscles are indispensable. It is fortunate that muscles themselves are susceptible to very few diseases, even though much can happen to the nervous system which controls them.

Sir Arthur Keith[3] wrote:

> Our muscles if we regard them as living engines—are always running—always ready at any instant to go into motion, their steam is always up. Some of them are running with their clutch out, such are employed only for temporary or definitely limited efforts; but others of them—the static muscles, those which have to maintain the upright and standing postures of the body—are kept running with their clutch always engaged.

The masticatory muscles, as part of the antigravity muscles which maintain the body in the standing posture, are "clutched" muscles. The occasional temporary failure of this antigravity system attests to its importance. A person who faints, while standing, falls forward. The dozing commuter, with his drooping head and his sagging jaw is a more common sight.

3. Keith, Sir A. Menders of the maimed. London, Oxford University Press, 1919, p. 107.

The action of the muscles that move the jaw act in large part as reflexes—through the extensor or stretch reflex and the flexor reflex. The stretch reflex is most sensitive in muscles which oppose the force of gravity. When this force acts on the masseter, temporal and internal pterygoid muscles, the spindles contained in them are excited. This causes an impulse to be set up, synapsing in the brain stem with a motor nerve thus conducting it to the muscle fiber which was originally stretched; the muscles contract and elevate the mandible. This reflex can be demonstrated by tapping the chin. The resulting jaw jerk is identical in its action with the more familiar knee jerk.

The sudden opening of the jaws often is necessary for protection. Everyone, at some time or other, has had the experience of unexpectedly striking a hard object with the teeth while chewing. The masticatory cycle stops immediately and the mandible opens. This is accomplished by the flexor reflex which is more complex than the stretch reflex, believed to be the simplest in the body. The reason for this is obvious since opening the jaws brings more muscles into play than closing it, and hence requires far greater integration.[4]

The posture and movement of the mandible are achieved by the integrated action of muscles. These muscles may be divided into four groups:[5]

a. Prime Movers or Agonists, those whose contraction is essentially responsible for the movement of the part.

b. Antagonists, those which oppose the prime movers.

c. Synergists, those which assist the agonist and reduce unnecessary movements to a minimum.

d. Fixation Muscles, those whose contraction causes the fixation of the neighboring joints and maintains the limb or body in a position appropriate for carrying out the particular movement.

This classification is useful as long as the important observation made by John Hunter over 150 years ago is kept in mind—that no muscle acts alone. The coordination of muscular activity in voluntary movement involves, among other things, the alternate action of antagonistic muscles—antagonists "cease" to function when agonist muscles begin to contract. A familiar example is the relationship of the triceps and the biceps in alternate flexion and extension of the elbow. When the elbow is flexed, the triceps is relatively inactive; when the elbow is extended, the biceps is quiet. Similarly when the mouth opens, the powerful flexors or elevators of the mandible must "relax" in order to permit the muscles which extend or depress the jaw to act. This alternate relaxation and contraction in antagonistic muscles Sherrington explained by reciprocal innervation.[6] The alternate lowering and raising of the mandible as in rhythmic chewing is explained in the same way. Voluntary movement in man, recent investigations show, is much more complex than the simple alternate contraction and relaxation of antagonistic muscles.[7]

MUSCLE SPASTICITY

The failure of the masticatory muscles to "relax" during the opening of the mouth will limit opening. Because of the fact that these muscles are yoked, as it were, if one masseter muscle does not "relax" the opening will be limited as effectively as if the entire flexor group were involved (masseter, temporal and internal pterygoid muscles). The extent to which the individual muscles do not "relax" often can be determined by observing the nature of mandibular movements. The di-

4. Langley, L. L., and Cheraskin, E. The physiological foundation of dental practice. St. Louis, C. V. Mosby Co., 1951, p. 66-73.

5. Best, C. H., and Taylor, N. B. Physiological basis of medical practice, ed. 3. Baltimore, Williams & Wilkins Co., 1943, p. 1567.

6. Sherrington, C. W. Integrative action of the nervous system. New York, Charles Scribner's Sons, 1906, p. 83.

7. Levine, M. G., and Kabat, H. Cocontraction and reciprocal innervation in voluntary movement in man. Science 116:115 Aug. 1, 1952.

rection of deviation of the mandible during opening has been found to point to the side on which the internal pterygoid muscle is involved. The inability of the patient to move his jaw sideways in the opposite direction will confirm the observation. It is the spasm of the antagonists which prevents the agonists from opening the mouth.

When a single muscle fiber is activated it obeys the "all-or-none" law. It either contracts completely or not at all. The alternate contractions of some of the thousands of muscle fibers which comprise a muscle determine the extent of its contraction. Unlike an engine of an automobile in which an increase in power is gained from an increase within a fixed number of cylinders, in muscle, power is increased by the progressive addition of more "cylinders." Such progressive addition of the action of muscle fibers is referred to as recruitment. An exaggeration of the tonic state of a muscle is referred to as spasticity. In this state, because of the impulses that fire the muscle constantly, it becomes hard and rigid.[8] With experience, spasticity can be detected by palpation.

A group of disorders characterized by spasticity of muscle have been described as myalgias and include sciatica, painful shoulder syndromes, tennis elbow and writer's cramp.[8] Travell believes that myalgias constitute part of a large number of pain syndromes in which pain and limited motion are associated with trigger areas in the skeletal muscles. She describes the trigger area as a small hypersensitive region from which impulses bombard the central nervous system and give rise to referred pain. She found these areas, usually located within the myofascial structures, hypersensitive to certain stimuli, especially pressure, and the resistance to stretching led to apparent shortening of the affected muscle with limitation of motion.[9]

Travell states that a trigger area at a particular spot gives rise to a similar distribution of referred pain which follows fixed anatomic pathways and hence is the same in one person as another. She differentiates myalgias from sprains. In sprains, which usually involve joints, she finds that the reference of pain from the periarticular structures is close to or may even circumscribe the source of pain. She reports that local anesthetizing, either by spraying the overlying skin with ethyl chloride or procaine infiltration, stops the pain and relieves the muscle spasm in both sprains and myalgias. She holds that the efficacy of local anesthetization implies that the mechanism which set the pain cycle in motion is not the same as that which keeps it going. The pain cycle continues long after the precipitating cause has vanished. Of several theories advanced, the one that has gained the most currency holds that these agents briefly interrupt the cyclic (feed-back or reverberating) process, thus ending it.

Infiltration of a local anesthetic into tender masticatory muscles[10] and ethyl chloride spray on overlying tissue have both produced encouraging results.

USE OF ETHYL CHLORIDE

A group of ten patients with limited mandibular movement due to muscle spasm were treated with ethyl chloride spray (Table 1). Another group also consisting of ten patients were not treated (Table 2). The method of treatment was based on the procedure as outlined by Travell:[8]

Guard against fire hazards.
Raise patient's head above level sprayed.
Hold container 2 feet away.
Start stream at trigger area, carry over reference zone.

8. Travell, J. Basis for the multiple uses of local block of somatic trigger areas (procaine infiltration and ethyl chloride spray). Mississippi Valley M. J. 71:13 Jan. 1949.

9. Travell, J., and Rinzler, S. H. Scientific exhibit: myofascial genesis of pain. Postgrad. Med. 11:425 May 1952.

10. Schwartz, L. L., and Tausig, D. P. Temporomandibular joint pain: treatment with intramuscular infiltration of tetracaine hydrochloride. New York State D. J. To be published.

Table 1 • Patients with limited mandibular movement, treated with ethyl chloride

Case	Sex	Age	Duration of symptoms	Suspected causative factor	Duration of treatment	Place of treatment	Effect
1	Female	16	3 months	Bruxism	2 months	Home—sustained	Recovery
2	Male	22	2 days	Wide bite	1 treatment	Clinic	Recovery
3	Female	31	10 days	Bruxism	1 week	Clinic	Recovery
4	Female	22	1½ years	Not known	4 weeks	Home—not sustained	Temporary improvement
5	Female	33	1 week	Postoperative	1 treatment	Clinic	Recovery
6	Male	28	3 days	Bruxism	2 treatments	Clinic	Recovery
7	Female	45	2 days	Bruxism	1 treatment	Clinic	Recovery
8	Female	44	1½ years	Bruxism	1 week	Home—not sustained	Temporary improvement
9	Female	36	3 months	Bruxism	4 weeks	Home—sustained	Recovery
10	Female	40	5 months	Bruxism	4 weeks	Home—not sustained	No change

Apply stream at acute angle.
Spray in one direction, with slow sweeping motion.
Repeat sweeps in rhythm of a few seconds on and off.
Lengthen interval between sweeps if aching develops.
Do *not* frost skin.
Stretch muscle by gentle movement.
Continue until pain disappears and tenderness at trigger area is less.
Stop if no effect in five minutes.

The patient was seated before a table; the thumb of the hand of the side to be sprayed was placed under the chin and the four fingers were held together so as to form a shield to protect the eyes and nose. The patient was asked to keep the teeth slightly apart and the area of the masseter muscle was sprayed from the anterior border toward the auditory meatus tracing successive pathways from the zygomatic arch to the mandible (Fig. 1). During each interval the patient was asked to support the mandible by placing his fist firmly under his chin with his elbow on the table. This position, by reciprocal inhibition of the masticatory muscles, prevents their reflex contraction while they are stretched. Stretching generally was accomplished through gentle passive movements of the mandible by the use of an adjustable mouth prop with the rachet disengaged (Fig. 2). If the opening was too limited to permit the application of this device, the patient was asked to move the mandible gently himself. In some cases the mouth prop was unnecessary.

Table 2 • Patients with limited mandibular movements, not treated

Case	Sex	Age	Duration of symptoms	Suspected causative factor	Time since examination	Change†
1	Female	48	4 years	Bruxism	6 months	None
2	Female	24	3 weeks	Bruxism	3 months	None
3	Female	45	7 months	Bruxism	7 months	None
4	Female	25	3 weeks	Bruxism	3 months	None
5	Male	41	10 months	Bruxism	11 months	None
6	Female	30	Not known	Not known	5 months	None
7	Female	45	3 months	Bruxism	1 month	None
8	Female	31	2 months	Not known	11 months	None
9	Female	23	1 month	Bruxism	2 months	Temporary improvement
10	Female	18	2 weeks	Bruxism	14 months	Recovery

Fig. 1 • Use of ethyl chloride spray

The internal pterygoid muscles were palpated with the forefinger as soon as the increase in the range of mandibular movement made it possible. If muscle spasticity or tenderness was found, these muscles sometimes were sprayed. In order to prevent the inhalation of ethyl chloride vapor, the following procedure was devised: The patient was asked to stop breathing at the end of an inspiration. The tongue was rapidly depressed with the forefinger and the area over one internal pterygoid muscle was sprayed for 2 or 3 seconds. When the patient exhaled, his breath expelled the ethyl chloride vapors.

In all cases, ethyl chloride was applied for the patient at the Clinic the first time. If subsequent examination indicated the need for daily application, a member of the patient's family was instructed in the extraoral use of ethyl chloride after being strongly apprised of the need for safeguards because of the anesthetic and flammable properties of this agent as well as its ability to freeze tissue. Five patients continued treatment at home. The mouth prop was never prescribed for home use. No untoward reactions occurred.

CASE REPORTS

The following case reports illustrate the use of ethyl chloride in the treatment of limited, painful mandibular movement.

Case 1 • A schoolgirl, aged 16, was seen in January, 1953. Her chief complaint was her inability to open her mouth fully. She had had this symptom for three weeks, having awakened with it one morning. She had experienced this symptom on two previous occasions, three and six months before her visit. At these times, in about one day after the onset, she was able to open her mouth normally. Her mother described her as a placid girl but the patient stated that her teeth are together tightly all the time, a habit which suggests tension. This patient had received radium therapy a number of years earlier for the treatment of a hemangioma of the right side of the face.

Examination revealed an apparently normal girl of small stature. She had a full complement of teeth marked by a severe malocclusion. There was an occlusal interference in the area of the right second molars. The intermaxillary distance (an arbitrary measurement usually between upper and lower midlines) was 21 mm. The mandible deviated to the left in opening. The right lateral movement was limited. Palpation of the condyles through the auditory meatus revealed that they did not leave the fossae during the opening movement. The masticatory muscles were not tender but appeared spastic to touch. Attempt at wide opening caused pain. Roentgenographic examination by the use of the Updegrave technic, as well as lateral laminagraphy, confirmed the clinical findings and showed that the excursions

of the condyles were limited bilaterally. Exercises with the use of a stretching device were tried for two months. There was no change. During the last week of April, ethyl chloride spray was used and was demonstrated to the child's mother, who was asked to use it twice daily and to report to the Clinic. One week later, an opening of 26 mm. was reported; two weeks later, 28 mm. In another week the patient was able to open to 30 mm. without pain, and one month later, on June 28, 1953, examination revealed an intermaxillary distance of 32.5 mm. (Fig. 3, 4). It also was found that the condyles now moved out of the fossae. Laminagrams taken at this time revealed normal condylar excursion. Ethyl chloride was discontinued and two months later (August, 1953) normal mandibular function had been maintained (Fig. 5).

Fig. 2 • Method of stretching after ethyl chloride spray

Case 2 • A young man, aged 22, was seen in June, 1953. He had been in extreme pain for the preceding two days, could not eat, and found speech difficult because of the inability to open his mouth or move his lower jaw. His symptoms had appeared suddenly while taking a wide bite.

Examination disclosed an intermaxillary distance of 12 mm. The patient could not move his mandible laterally. The left temporomandibular joint area was exquisitely painful to digital pressure. Palpation of the condyles through the external auditory meatus revealed rotation of the condyles but no excursion out of the glenoid fossae. A tender area was found in the left masseter muscle with reference of pain to the joint. After extraoral treatment with ethyl chloride spray, the intermaxillary distance increased to 24 mm. Palpation of the internal pterygoid muscle was now possible and revealed spasticity with a tender region in the left muscle causing pain reference into the left joint. Ethyl chloride spray of the internal pterygoid muscle permitted further opening to 31 mm. Reexamination after treatment disclosed normal condylar movements, the absence of tender muscles or painful joint. The patient stated that he was free of pain and could move his lower jaw freely. He has remained so to the present time (August, 1953).

Case 3 • A nurse, aged 31, was seen in June, 1953. She complained of pain in the left temporomandibular joint region and of the inability to open her mouth fully. Ten days earlier she had awakened one morning and found that she could barely separate her teeth. During the day she had been able to move her mandible more freely but pain had increased. The patient stated that these symptoms appeared a few days after she had had a full-mouth series of roentgenograms taken. She was unaware of bruxism.

Examination disclosed an intermaxillary opening of 28 mm. The mandible deviated to the left while opening. Laminagrams disclosed limited condylar movement. The opening, right lateral, and protrusive movements of the man-

dible were painful. Pressure on the left temporomandibular joint through the meatus caused pain. The left internal pterygoid muscle was spastic and painful to digital pressure. After extraoral ethyl chloride treatment the patient was free of pain and able to open her mouth to 35 mm. After a week of daily treatment received at the hospital the patient was reexamined. The intermaxillary distance was 46 mm. and the patient was comfortable. The left temporomandibular joint still was slightly sensitive to pressure. Treatment was discontinued and one week later sensitivity had disappeared. Follow-up laminagrams showed a normal range of condylar movement. There has been no recurrence of symptoms as of August, 1953.

Case 4 • A young woman, aged 22, was seen in May, 1953. She complained of pain in the region of the left temporomandibular joint and of inability to open her mouth fully. She had had these symptoms for the preceding year and a half. Selective grinding of cusps by her dentist a month before her visit had resulted in

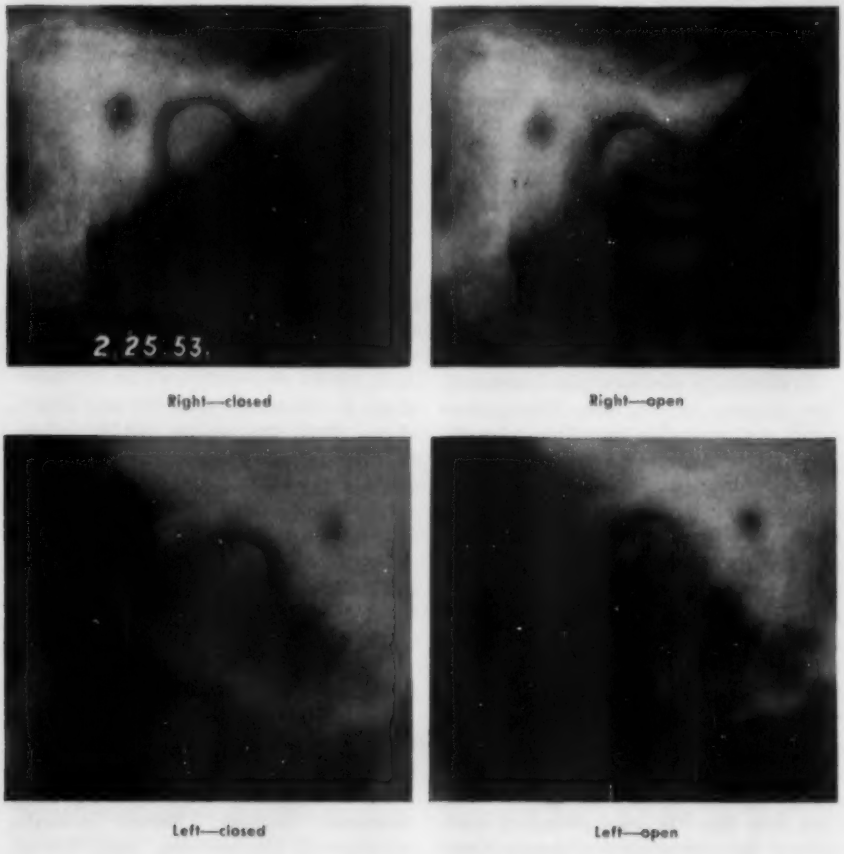

Fig. 3 • *Case 1. Lateral laminagrams of temporomandibular joints. Before treatment*

some temporary improvement. The patient, a schoolteacher, gave the impression of being a tense person. She was unaware of bruxism.

Examination revealed an intermaxillary opening of 26 mm. During the opening movement the mandible deviated to the left. This movement as well as the right lateral movement were painful. All teeth were present with the exception of the lower left first molar. In the area of the left first bicuspids there was an occlusal interference. Tender regions were found in the left masseter and internal pterygoid muscles and the pain was referred into the left temporomandibular joint which was tender to pressure. Her husband was instructed in the extraoral application of ethyl chloride. After treatment the intermaxillary distance increased to 38 mm. The patient sent in detailed reports.

For two days there was no change. On the third day the patient was able to open her mouth slightly more. On the fourth day after there was no pain at all, and the patient was able to open her mouth considerably more. Improvement

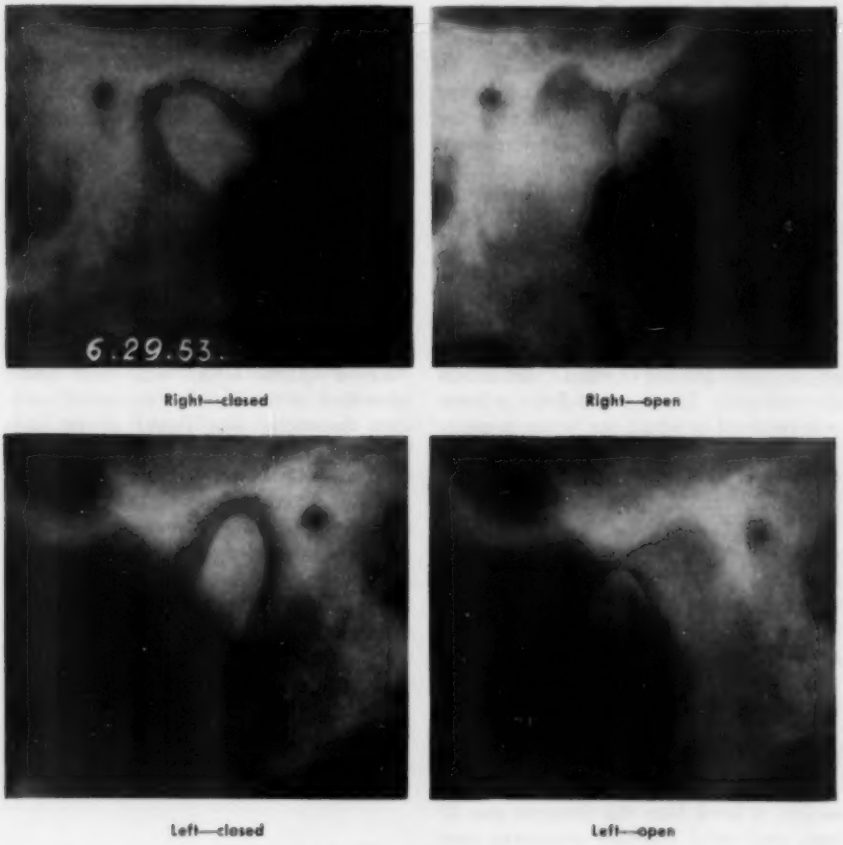

Fig. 4 • Case 1. Lateral laminagrams of temporomandibular joints. After treatment

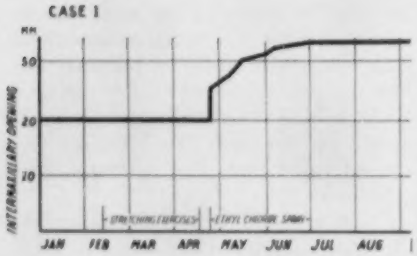

Fig. 5 • Case 1. Effect of ethyl chloride spray on intermaxillary opening

continued. A week later the patient reported that she was beginning to call herself "cured." The day she wrote this, she left for a week-end trip and forgot to take the ethyl chloride with her. In two days she was unable to open her mouth as fully as before. By the next day pain had returned as well as limitation of movement. On her return she resumed treatment and her symptoms disappeared again. On the following week end she again discontinued treatment, was symptom-free for two days, only to have her symptoms return on the third. Treatment was resumed and it again gave her relief. The patient went out of the city for the summer and the use of ethyl chloride was discontinued. Three weeks later a letter was received in which she wrote in part: "The pain is practically constant and the opening is so limited that I can just fit one finger into my mouth."

Case 5 • A woman, aged 33, was seen in April, 1953. After the extraction of a lower third molar a week previously, she had been able to open her jaws only slightly. Examination revealed an intermaxillary distance of 5 mm. No areas of tenderness, other than the site of extraction, were found. After ethyl chloride treatment the opening was increased to 18 mm. and it was possible to treat the socket. A week later the distance was 22 mm. and ethyl chloride treatment now increased it to 31 mm. This distance was found to be the same at the next weekly visit. The patient has not been seen since that time.

DISCUSSION

The investigations conducted thus far, aside from the promise of practical utility as illustrated by the treatment of postoperative trismus in Case 5, bear out the truth of the admonition that "Muscle fiber is delicate, sensitive, and responsive. It can be coaxed but not driven."[11] Ethyl chloride has been found useful in coaxing spastic muscles to relax.

In a group of ten patients (8 female, 2 male, average age 31.7) suffering from limited, painful mandibular movement, treatment with ethyl chloride spray resulted in recovery in seven, temporary improvement in two, and no change in one (Table 1). In a similar group of ten untreated patients (9 female, 1 male, average age 33.0) there was no change in eight, temporary improvement in one, and spontaneous recovery in another (Table 2).

Muscle spasm was held responsible for the limitation of movement found in both groups. Palpation often revealed the presence of spasm, which was most easily identified in the internal pterygoid muscles. Spasticity was found to be predominantly unilateral. In some patients only a single muscle of the masticatory group was involved, in others spasm also included the antigravity muscles of the neck and shoulder.

If the pain was acute either tender muscles or joints were palpable. These were sometimes found together; for example, in Cases 2, 3, and 4. In Case 7, the joint was painful but no muscle tenderness was found. When joint pain is present, its source is believed to be periarticular rather than intra-articular. Case 2 suggests acute joint sprain. In Case 1, on

11. Mackenzie, W. C. The action of muscles. London, H. K. Lewis & Co., 1918, introduction.

the other hand, tender muscles were not present though muscle spasm was palpable.

A number of factors may account for the fact that the improvement was temporary in three of the five patients for whom ethyl chloride treatment was continued at home. Home treatment admittedly was not sustained by four of the five patients with whom its use was attempted. In addition, in these cases, there was no consistency in the method of ethyl chloride application.

Among the five patients treated at the Clinic, the response to the use of ethyl chloride spray was rapid. In Case 2, for example, a single treatment resulted in immediate cessation of all symptoms. This was also true of Case 3, where the opening increased almost threefold in two weeks. The response of the patients treated at home was slow. In Case 1, over two months of daily treatment was required for recovery. Remission followed each weekly interruption in treatment in Case 4. The duration of symptoms before treatment may be responsible. The average duration for the patients treated in the Clinic was 13 days, for those treated at home it was nine months. It appears that the longer the duration of symptoms, the greater the obduracy to treatment. In Cases 2, 3 and 5, treatment was instituted within ten days after the onset of symptoms. Recovery was rapid. In Case 1, three months elapsed before ethyl chloride treatment was started. Recovery was slow. In Case 4, the symptoms were present for more than a year. Remission followed each interruption of treatment.

Livingston[12] explains this relationship of the duration of symptoms to their resistance to treatment in an interesting manner. He compares the harmonious succession of muscle activities with the playing of a phonograph record. As long as the needle stays in its groove, everything goes well. If, however, some disturbing factor causes the needle to jump, it cannot get back unassisted. The longer the needle stays out of the groove, the deeper will be the false path it cuts and the more difficult will it be to return it and keep it there. But if, before the false groove is cut too deeply, the needle can be lifted back into its normal groove, it will once more call forth the smooth and harmonious sequence which constitutes normal physiologic activity.

The nature of the "disturbing factor" may also influence the rapidity and permanence of recovery. In the patients studied, other than in the type of problem represented by Case 2, bruxism appears to be a significant factor. In the group treated, for example, three were aware of this habit and four stated that they awoke one morning to find the symptoms. Psychiatric consultations of 39 patients from the Clinic revealed that all were highly tense individuals with a history of bruxism.[13]

SUMMARY

1. Muscle spasm seems to be responsible for limited, painful mandibular movement in 20 patients with this disorder.

2. Bruxism and mandibular overextension seem to be the factors most closely related to the initiation of this disorder.

3. Ethyl chloride spray has been found to be effective in the treatment of limited, painful mandibular movement caused by muscle spasm and offers a promising field for further investigation.

12. Livingston, W. K. Pain mechanisms. New York, Macmillan Co., 1943, p. 234.

13. Cohen, Max, and Moulton, Ruth E. Personal communication.

The relation of occlusal surfaces to the stability of artificial dentures

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The relation of occlusal surfaces to the stability of dentures during mastication has long been a controversial topic in prosthetic dentistry. This stability is determined largely by the direction of the resultant forces of mastication acting on the occlusal surfaces.

The object of this paper is to present a physical analysis of the factors affecting the direction of the forces applied to denture teeth during mastication and to investigate from the viewpoint of the frontal plane the effect of these forces on denture stability. The results of this investigation will place in the hands of the dentist a means of analyzing the chewing forces so that by using this method he can consciously direct and distribute these forces to achieve maximum denture stability for each patient.

STABILITY OF DENTURES

Of the main factors contributing to the stability of a denture,[1,2] the forces of retention, such as atmospheric pressure, adhesion and surface tension, are evidently little affected by mastication. On the other hand, the forces of the cheek, the tongue and the impact of food on the teeth become important considerations for denture stability during mastication; of these, perhaps the most important is the force applied directly to the teeth through the food during the action of mastication.

There are two types of masticatory processes: biting, in which the anterior teeth are used, and chewing, in which the posterior teeth are used.[3] In the latter process, which will be considered primarily, the forces of mastication acting on the dentures are applied through the food being chewed, before the upper and lower teeth actually make contact.

In this paper the force exerted on the occlusal surface directly through the bolus of food during the action of chewing is called "the food force of mastication." This term "the food force of mastication" is intended to have no other meaning or connotation besides this specific one. Furthermore, to simplify the discussion, this resultant force is considered as acting on the center of the occlusal tooth surface; and the force exerted on the buccal and lingual tooth surfaces is disregarded, since it is inconsequential.

Because the lower denture is in general more difficult to stabilize satisfactorily, the analysis is confined first to the forces

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1. Swenson, M. G. Complete dentures. St. Louis, C. V. Mosby Co., 1940, Chap. 26.

2. Skinner, E. W., and Chung, Paul. The effect of surface contact in the retention of a denture. J. Pros. Den. 1:229 May 1951.

3. Kurth, L. E. Mandibular movements in mastication. J.A.D.A. 29:1769 Oct. 1942.

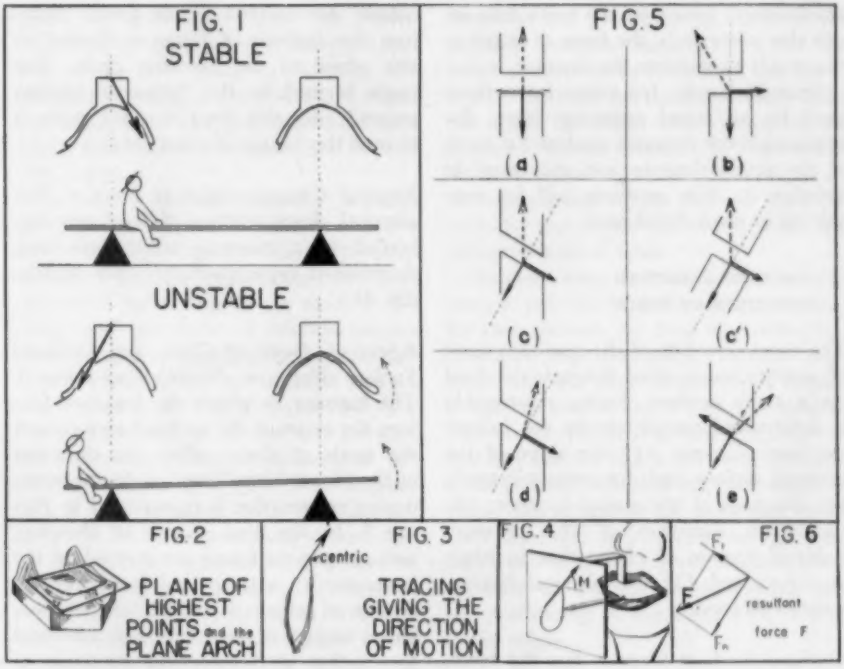

Fig. 1-6 • Stabilizing and unstabilizing forces: Fig. 1: Force inside lower arch, tending to stabilize denture; force outside arch, tending to dislodge denture. Fig. 2: "Plane of highest points." Projection of ridge on plane, the plane arch, is curve inside which "stable" force must fall. Fig. 3: Direction of jaw motion with greatest effect on stability indicated by arrow. Fig. 4: Chewing tracing of angle of chew M, recorded in frontal plane. Fig. 5: Effect of slope of occlusal surface and angle of chew on forces of mastication acting on the tooth. Dotted arrows indicate upward direction of motion of jaw. In (a) frictional forces on tooth are equal and opposite in direction, and the resultant force of friction is zero. In (b) force of friction on the lower teeth is to the right. In (c) and (c') situation is similar to (b), other situations are shown in (d) and (e). Fig. 6: Resultant force, sum of normal and tangential force, represented by diagonal of rectangle

affecting the stability of the lower denture during the process of chewing.

DIRECTION OF FORCE NECESSARY FOR DENTURE STABILITY

Every force has both magnitude and direction; however, only the direction of the force is concerned with the stability of the denture. It is a well-known principle that to promote stability, the resultant direction of the applied force must fall inside the arch of the lower denture (Fig. 1); if it falls outside the arch, it tends to dislodge the denture.

The ridge arch is a three-dimensional curve; the term "plane of highest points" (Fig. 2) refers to a horizontal plane determined by three points: the point on the posterior right ridge just below the most posterior tooth, the corresponding point on the left ridge and the highest point on the anterior arch. The line drawn on this plane, tracing the ridge below it, is termed the plane arch. If the direction of the resultant "food force of

mastication" acting on the tooth falls inside this plane arch, the force of mastication tends to stabilize the denture.

Since, however, for every force there must be an equal opposing force, the opposing force operates against the teeth of the upper denture and may tend to dislodge it. This problem will be considered in some detail later.

FACTORS AFFECTING DIRECTION OF FORCE

The exact direction of the resultant force of mastication exerted through the food on a tooth surface during mastication is determined completely by the following three factors: (1) the slope of the occlusal surface and, for anatomic teeth, the steepness of the cuspal inclines; (2) the exact direction of the patient's habitual motion of chew, that is, angle of chew; and (3) the physical characteristics of food.

Occlusal Surface Slope • For flat teeth, the occlusal surface slope is the angle formed by the "plane of highest points" and the occlusal surface plane; for anatomic teeth, it is the angle between the "plane of highest points" and the "cuspal peak plane." (See Fig. 11.)

Angle of Chew • Chewing occurs on one side of the mouth at a time. The motion of the lower jaw with respect to the upper may be roughly described as an opening movement with a downward path, followed by a lateral movement toward the side on which the chewing is taking place, and a final movement upward from this lateral position into centric position. The mechanics of the chewing motion have been demonstrated by many investigators, including Kurth,[3,4] Boswell[5] and Hildebrand,[6] by the use of simple extraoral devices (Fig. 3 and 4).

It is during the last part of this final upward movement into centric position that the maximum "food forces of mastication" are exerted on the tooth; therefore the analysis of forces is limited to this phase of the chewing cycle. The angle formed by the "plane of highest points" and this final upward path is termed the "angle of chew, M."

Physical Characteristics of Food • The physical characteristics of food are embodied in a constant which has been determined experimentally. (See Appendix, II.)

Effect of Angle of Chew and Occlusal Surface Slope on Direction of Force • The manner in which the first two factors, the slope of the occlusal surface and the angle of chew, affect the direction of the "food forces" exerted on the tooth during mastication is represented in Figure 5. In the final motion of chewing, two component forces are exerted on the lower teeth: a tangential force, the direction of which is parallel with the occlusal surface of the tooth, and a normal force; that is, a force, the direction of which is perpendicular to the occlusal surface. The normal force is caused by the "pressure" exerted through the food on the occlusal surface; the tangential force is due to the "friction" of the food moving along the occlusal surface as the upper tooth remains stationary and the lower tooth moves with the mandible. The frictional force, parallel with the tooth surface, tends to hold back the movement of the jaw and is therefore in the opposite direction to the jaw motion.

In Figure 5 the dotted arrows indicate the upward direction of the motion of the jaw. In (a) the jaw is moving straight up, the occlusal surface is horizontal, and the food will move off the surface of the

4. Kurth, L. E. Mandibular movement and articular occlusion. J.A.D.A. 39:37 July 1949.

5. Boswell, J. V. Practical occlusion in relation to complete dentures. J. Pros. Den. 1:307 May 1951.

6. Hildebrand, G. Y. Studies in the masticatory movements of the human lower jaw. Berlin, Walter de Gruyter & Co., 1931.

tooth to the right and left indiscriminately, half moving to the right and half to the left. Thus, in this case the frictional forces on the tooth are equal and opposite in direction and cancel each other; that is, the resultant force of friction is zero.

In (b) the occlusal surface is horizontal, but the direction of motion is to the left of the perpendicular to the occlusal surface; therefore, in this case more food moves off the surface of the tooth to the right, and the force of friction on the lower tooth is to the right. In (c) the motion is vertical, but the occlusal surface is not horizontal; however, since only the force on the occlusal surface is important, the buccal and lingual surfaces of (c) can be redrawn as in (c′). The diagram (c′) is now identical with the diagram (b), and the force previously determined in (b) can be redrawn in (c′) and in (c). Similarly in (d) and (e), when the occlusal surface of the tooth is sloped and the direction of the motion is not vertical, the direction of the forces is as shown.

From these observations, the following principle becomes apparent: the force of friction, that is, the tangential force on the occlusal surface, moves from the perpendicular to the occlusal surface in a direction contrary to the motion of the jaw. Furthermore, the resultant force on the tooth, obtained by adding vectorially (Fig. 6) the tangential and normal component forces, lies on the same side of this perpendicular as does the tangential force itself.

Therefore, the resultant "food force of mastication" on the lower tooth is directed toward the opposite side of the perpendicular to the occlusal surface from that to which the motion of the jaw is directed.

FORCE ANALYSIS

The force analysis, or formulation of the mathematical criteria for stability, is based on the principles set forth in the previous sections, namely: (1) For the lower denture to be stabilized, the direction of the force on the lower tooth must fall inside the plane arch drawn on the plane of highest points. (2) The factors affecting the direction of this force on an occlusal surface are the slope of the tooth surface, the angle of chew, and the characteristics of food.

Of these three factors the direction of chew is peculiar to and can be measured for each patient; the food characteristics, obtained experimentally, remain constant; only the slope of the tooth surface is subject to the control of the dentist. The problem thus is to find the range of occlusal surface slopes that will result in a stable force direction for each angle of chew. The choice of the particular stable force direction and corresponding occlusal surface slope for a given angle of chew depends on clinical considerations and the positioning of the teeth with respect to the ridges.

Two Coordinate Systems • The force analysis is illustrated in Figure 7; the special case of flat-surfaced teeth is considered first. Since a similar plan can be adopted for both sides of the mouth, in this article the force analysis is made for only one side. The two sets of mutually perpendicular axes, the solid and dotted lines in Figure 7, represent two coordinate systems. The solid-lined horizontal-vertical system associated with the plane of highest points and the tangential-normal system associated with the occlusal surface are each independent of the other and related only by a simple rotation through an angle S about the origin. All angles are measured from the horizontal, that is, the plane of highest points.

The "food force of mastication" acting on the occlusal surface is represented by the vector F; and the direction of the final closing motion of the jaw, that is, the direction of the displacement or

velocity of the tooth with respect to the upper jaw, by the vector V. Each of these vectors has components with respect both to the plane of highest points and to the tooth surface coordinate systems. If it is assumed that the teeth are placed directly over the ridge, it is seen that the necessary condition for stability is that the resultant force F should be directed to the right of the vertical line, which by definition is perpendicular to the plane of highest points.

Equations of Force on Tooth Moving Through Food • Food may be thought of as either a viscous fluid or an elastic rubber. In the former case the motion is determined by the velocity of the occlusal surface through the food and in the latter case by the displacement of the occlusal surface in the food; both motions are considered in relation to the fixed upper jaw. The force exerted on an occlusal surface moving through a food mass is given by standard equations of physics for the movement of a rigid body through either an elastic substance or a viscous fluid. These equations, the same for both cases, are:[7-9]

$$F_t = -AV_t$$

$$F_n = -BV_n$$

where F_t and F_n are the tangential and normal components of the force; V_t and V_n the corresponding components of the displacement (or velocity); and A and B, constants characterizing inherent properties of the particular substance. Actually $F_t = -ADV_t$ and $F_n = -BDV_n$ where for a viscous fluid D is the diameter of the surface and for the elastic rubber D is the area of the surface, where A and B in each case are different constants. Since only F_t/F_n is considered here, the D's cancel out, and only A/B needs to be considered.

Thus, the direction of the "food force" applied during mastication to the rigid-bodied tooth is governed by these equations, where A/B, the only form in which these constants appear in the results, is independent of the dimensions of the occlusal surface. A/B was experimentally determined for a sample of meat to be 0.14. (See Appendix, II, for the details of the rational and experimental method used.)

Critical Condition of Stability • It can be seen that the stability of the denture depends on the horizontal-vertical components of the force, since, for the teeth placed directly over the ridge as in Figure 7, a force directed to the right of vertical, where $F_h > 0$, is "stable," whereas a force directed to the left of vertical, where $F_h < 0$, is "unstable." Therefore the critical direction for a stable force is simply the vertical, that is, where $F_h = 0$. By the use of this critical condition for stability and these physical equations, the formula for the critical occlusal surface slope S_c corresponding to $F_h = 0$ can be derived in terms of M, the angle of chew and A/B, the food constant.

Since the direction of the "food force of mastication" acting on the lower occlusal surface depends on the motion of this tooth surface through the food, the equations here presented, connecting the occlusal surface motion and the force, are given in terms of the occlusal surface coordinate system; however, the motion of the jaw as given by the patient is measured in the plane of highest points coordinate system, and the stability of the denture has been shown to depend on the horizontal-vertical components of the force in this same coordinate system. When these considerations are treated mathematically (Appendix, I), it is found that the critical condition for stability that the force be

7. Lamb, Horace. Hydrodynamics, ed. 6. New York, Dover Publications, 1945, Chap. 11.

8. Love, A. E. H. Treatise on the mathematical theory of elasticity, ed. 4. New York, Dover Publications, 1944, Chap. 3.

9. Joos, George. Theoretical physics. New York, G. E. Stechert & Co., 1934, p. 205.

vertical requires that the tooth surface slope S_c satisfy the following equation:

$$\tan S_c = (\tfrac{1}{2}) \left[(1\text{-}A/B) \tan M \pm \sqrt{(1\text{-}A/B)^2 \tan^2 M - 4A/B} \right]$$

where S_c is the critical occlusal surface slope, M the angle of chew and A/B the food factor constant with the value 0.14. The following three consequences of this relation may be observed:

1. In order to have a real solution, tan $M > 2\sqrt{A/B}/(1\text{-}A/B)$. Consequently, if the angle of chew M is such that tan M is less than $2\sqrt{A/B}/(1\text{-}A/B)$, the "masticatory food forces" can never aid in denture stability. If the value $A/B = 0.14$ is substituted, this limiting angle of chew becomes 41 degrees.

2. It is evident from the equation that tan $S_c > 0$, since M, for human beings, is always less than 90 degrees. This means that S must always be positive ($S>0$) for the "masticatory food forces" to aid in denture stability; otherwise $S<0$ (Fig. 8) can never result in a denture stabilized by the "food forces of mastication," when

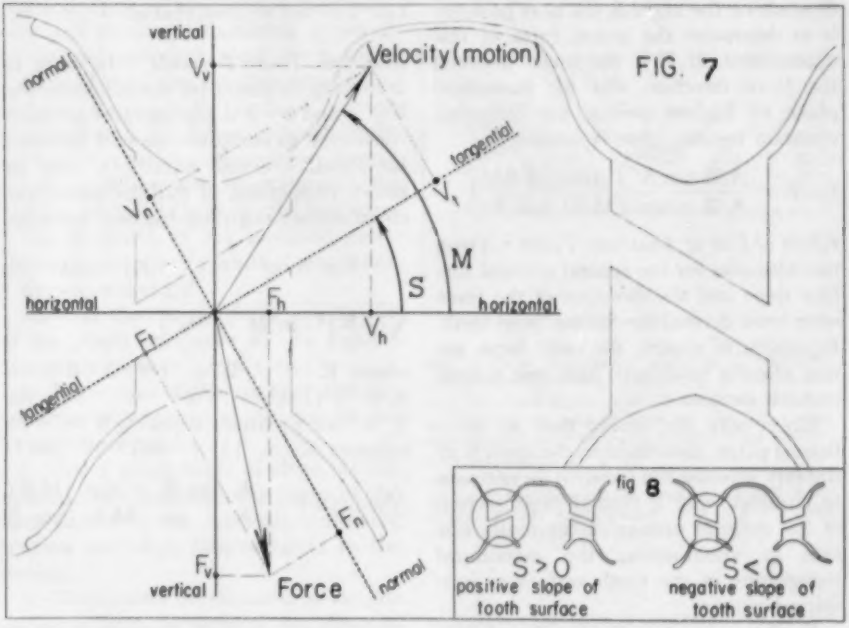

Fig. 7-8 • Force analysis. Fig. 7: Coordinate systems. On right side of patient's mouth, solid line labeled "horizontal" represents "plane of highest points"; solid line labeled "vertical" represents perpendicular to "plane of highest points"; dotted line labeled "tangential" represents occlusal surface; dotted line labeled "normal" represents perpendicular to occlusal surface. Components of displacement or velocity in horizontal-vertical coordinate system are V_h and V_v; in coordinate system of occlusal surface, components are respectively V_t and V_n. Similarly force has components F_h, F_v, and F_t, F_n, in "vertical" and "occlusal surface" coordinate systems. Note that angle M is measured angle between direction of chew and horizontal, whereas S is angle between horizontal and occlusal surface, whose limits are to be determined. Fig. 8: Ocolusal surfaces corresponding to $S>O$ and $S<O$

the teeth are placed directly over the ridge. Several investigators have observed this result qualitatively, among others Boswell and Pleasure.[5, 10-13]

3. It is evident from the formula that the + and — signs before the square root give respectively two values of the critical occlusal surface slope S_e for a given angle of chew M. Thus, for each angle of chew M, all occlusal slopes S between these two critical values of S result in a force direction tending to stabilize the denture.

Direction of Force • Since, however, for any occlusal surface slope, whether "stable" or "unstable," the specific angle at which the resultant force is directed depends on the angle S, the next problem is to determine the actual form of this dependence. If F is the angle between the force direction and the horizontal plane of highest points, the following equation results: (See Appendix, I.)

$$\tan F = \frac{A/B \tan S + \tan (M\text{-}S)}{A/B - \tan (M\text{-}S) \tan S}$$

Effect of Use of Anatomic Teeth • These two formulas for the critical occlusal surface slope and the direction of the force have been derived for flat-surfaced teeth. Equations of exactly the same form are true also for teeth with anatomic cusped occlusal surfaces.

Since only the forces that lie in a frontal plane contribute to the aspects of stability already discussed, it is necesary to consider only a frontal cross section of the occlusal surface of the tooth. For ease in visualization, the mesiodistal topography of the tooth surface is considered planar.

Furthermore, it is the functional portion, that is, the actual chewing surface, of the occlusal surfaces that is of interest. Clinically it can be seen (Fig. 9, 10) that not all the buccal plane of the upper tooth or the lingual plane of the lower tooth is functional. The buccal surface of the lower tooth is curved and "cuts off" at a, while the lingual surface of the upper tooth "cuts off" at d. The functional surfaces of anatomic teeth are therefore represented by the sections ab, bc and cd. These functional surfaces consist of two types of planes that make an angle of e and -e respectively with the cuspal peak plane, and angles S + e and S − e respectively with the horizontal plane (Fig. 11).

The area of the +e surfaces, namely ab and cd, is approximately equal to the area of the -e surface, namely bc; or, equivalently, ab + cd = bc, as can be seen by observation of various anatomic teeth. In schematic representation the cusps in function can be approximated by inscribed circles (Fig. 10);[14] in this case it is easy to show that ab + cd = bc.

Anatomic Tooth Formula • In order to derive the formulas for cusped teeth, the S + e and S − e sloped surfaces are each considered to comprise one-half the total functional occlusal surface. It can be shown (Appendix, I) that the critical occlusal surface slope for anatomic teeth is:

$$\tan S = (\tfrac{1}{2})\left[(1\text{-}K) \tan M \pm \sqrt{(1\text{-}K)^2 \tan^2 M - 4K}\right]$$

where $K = A/B + T^2(1\text{-}A^2/B^2) - A/B\ T^4(1\text{-}A^2/B^2) + \ldots\ldots$, for $T = \tan e$; which when $A/B = 0.14$ becomes $K = .14 + .98T^2 - .14T^4$.

Also: $$\tan F = \frac{K \tan S + \tan (M\text{-}S)}{K - \tan (M\text{-}S) \tan S}$$

10. Boswell, J. V. Challenging current concepts of balance in full dentures. Illinois D. J. 12:530 Dec. 1943.

11. Boswell, J. V. Eliminate harmful occlusal stresses in denture making. D. Survey June 1951.

12. Pleasure, M. A. Prosthetic occlusion—a problem in mechanics. J.A.D.A. & D. Cosmos 24:1303 Aug. 1937.

13. Pleasure, M. A., and Friedman, S. W. Practical full denture occlusion. J.A.D.A. & D. Cosmos 25:1606 Oct. 1938.

14. Wheeler, R. C. Textbook of dental anatomy and physiology. Philadelphia, W. B. Saunders Co., 1940, Chap. 16.

It is interesting to find that this rather complicated problem involving anatomic teeth reduces to equations of the same form as for flat teeth, though the constant K is, however, now a function of both A/B and the angle e.

RESULTS OF FORCE ANALYSIS

The main problem under discussion has been to determine, for a given angle of chew, the range of angles of the occlusal surface for which the "food forces of mastication" acting on the occlusal surface are in a direction tending to promote denture stability. The equations developed for both flat and anatomic teeth give numerical expressions for the maximum and minimum stabilizing slopes of the occlusal surface S, for a given angle of chew M, and also the direction of the resultant force on the occlusal surface for any S and M. Substitution in these two formulas for numerical values shows: (1) the maximum and minimum stabilizing S for a given M and (2) the variation in the direction of the resultant force within the acceptable limits of the range of the occlusal slope.

These results for flat teeth are plotted on the graph in Figure 12. In Figures 12 and 13, it can be noted that:

1. For values of the angle of chew of less than 41 degrees there can be no "stable" force at all.

2. For a given angle of chew, as the occlusal slope increases, the angle of the force moves to an optimum stabilizing position and then returns again to the vertical.

3. The farther the direction of the jaw motion is from the vertical, the closer to the vertical is the force direction confined.

4. The maximum critical occlusal surface angle is too large to be practicable for angles of chew over 50 degrees but becomes important for angles below 50 degrees.

In regard to anatomic teeth, the fact that the angle of the slope of the cusps, e, enters only into the constant K allows a simple physical interpretation of the results. The effect of adding cusps to the tooth surface and thus of increasing the constant A/B, which is now replaced by K in the formula, is to raise the value of the limiting angle of chew below which (Fig. 12) there can be no stabilizing force direction; therefore for cusped

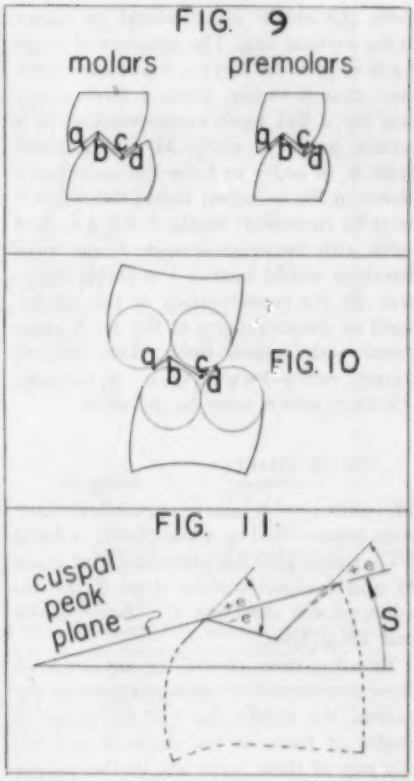

Fig. 9-11 • Functional surfaces of anatomic teeth and cuspal peak plane. Fig. 9: For molar and bicuspid teeth, area of slope ab + area of slope cd = area of slope bc. Fig. 10: Cusps represented schematically by inscribed circles. Geometrically, ab + cd = bc. Fig. 11: Occlusal surface slope S for anatomic teeth—angle S between cuspal peak plane and horizontal. Cusps make angles + e and − e with respect to cuspal peak plane

teeth the entire curve would be closer to the vertical axis. The presence of cusps tends to give the force a less stable direction; that is to say, given a force direction for a flat tooth corresponding to a certain angle of chew M and a tooth slope S, in order to have the same force direction for a cusped tooth, the angle S must be increased; similarly for a cusped tooth with the original angle S, the force direction would have a less stable direction. In the consideration of the advantages or disadvantages of flat teeth compared with cusped teeth, there are, of course, other factors such as chewing efficiency which must be included.

USE OF CHARTS

The numerical results of the analysis have been summarized in seven charts (Charts 1-7), which give for every angle of chew M and occlusal surface slope S the resultant force direction F. (See "Charts and Their Uses.")

By using these charts, for any angle of chew determined by measurements on the patient, the dentist can find the range of angles of force at his disposal and for any one of these force angles the proper occlusal surface slope.

CHOICE OF FORCE DIRECTION

The question as to which angle in the permissible range of force angles is actually the best choice must be decided by the dentist. This selection naturally will depend on the particular problem in each case. Some of the considerations which affect the decision are as follows:

Placement of Teeth Relative to Ridge • Figure 14 illustrates three ways of positioning the lower teeth with respect to the ridge; in each case the same force direction, represented by the solid arrow, has been applied to the teeth. In Case 1, where the teeth are directly over the ridge, this force would produce a stable condition for the lower denture. If the teeth of the lower denture are placed laterally to the ridge, the force though applied in the same direction falls outside the ridge and produces an unstable condition; it must be shifted to a position much farther inside the arch (Fig. 14, Case 2). If the lower teeth are placed lingual to the ridge, however, the force may be directed even slightly outward and still result in stability (Fig. 14, Case 3).

Relationship Between Upper and Lower Arches • Since for any force on the lower denture there is necessarily an equal and opposing force on the upper denture, the effect of this opposing force may be such that stabilization of the lower denture may tend to dislodge the upper denture. On the other hand, correct stabilization of the lower denture often can stabilize the upper denture also. All factors influencing the positioning of the teeth relative to the ridge by virtue of this fact only will affect the final choice of the direction of the force.

The relationship between the upper and lower arches is important only insofar as it determines the positioning of the teeth relative to the ridges. In Case 1 of Figure 15, for example, where the upper and lower arches are of the same width, the lower teeth may be placed directly over the lower ridge and the upper teeth directly under the upper ridge. In this case, when a stabilizing force acts on the lower denture, the equal and opposite force tends to dislodge the upper denture. In Case 2 (Fig. 15), where the upper arch is wider than the lower arch, the lower teeth may be placed directly over the ridge and the upper teeth on the inside of the upper arch. In this case, the reacting force tends to stabilize the upper denture. In Case 3 (Fig. 15), where the upper arch is narrower than the lower, the upper teeth can conceivably be placed over the ridge and the lower teeth inside the arch. The solid

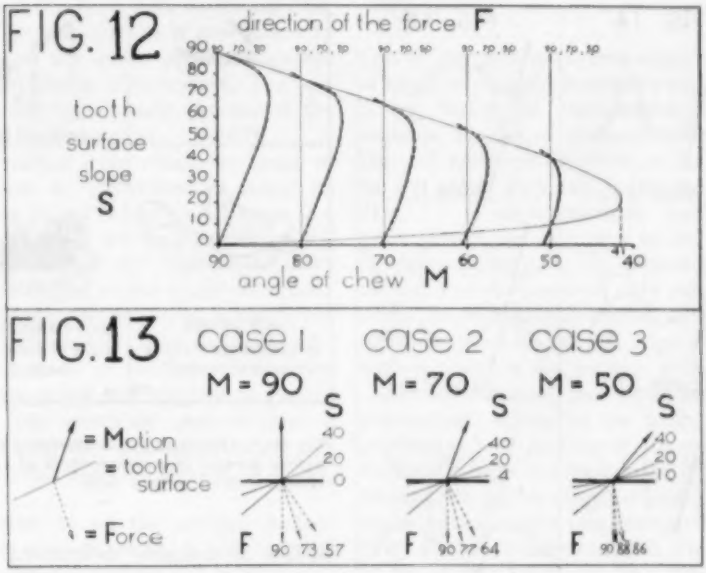

Fig. 12, 13 • Analysis of force. Fig. 12: Thin solid line, showing two limiting occlusal surface slope angles S for each angle of chew. For selected angles of chew of 90°, 80°, 70°, 60° and 50°, thick dashed line represents actual direction of force (read on upper scales) as occlusal surface slope S varies. Fig. 13: Directions of force corresponding to various characteristic occlusal surface slopes for three cases with angles of chew of 90°, 70° and 50°. Note that as angle of chew decreases, initial occlusal surface slope necessary for force to be vertical becomes greater

arrows in the figure indicate the direction of a force stabilizing the lower denture but not the upper denture; the dotted arrows represent a force stabilizing both the upper and the lower dentures.

Relative Stability of Upper and Lower Dentures • The stability of a denture depends in large measure on forces other than those applied through the food on the occlusal surface. If, for example, the upper denture is stable but the lower denture presents a problem, then added stability of the lower denture through the "food forces of mastication" would be desirable even at the expense of the upper denture, whose retention is adequate to resist this disruptive force.

The further inside the lower arch the force is directed, the greater is the contribution of the force to the stability of the lower denture. If the ridges are reasonably sound and the lower denture has good retention through other forces, it may not be necessary to direct the "food force of mastication" far inside the arch.

Therefore, in reaching the decision as to the proper angle for the force, the dentist would first consult the chart for the range of available directions and corresponding occlusal surface slopes and then make his particular choice in the light of these and other relevant factors.

This method, whereby the "food forces of mastication" acting on the occlusal surface can be utilized and distributed

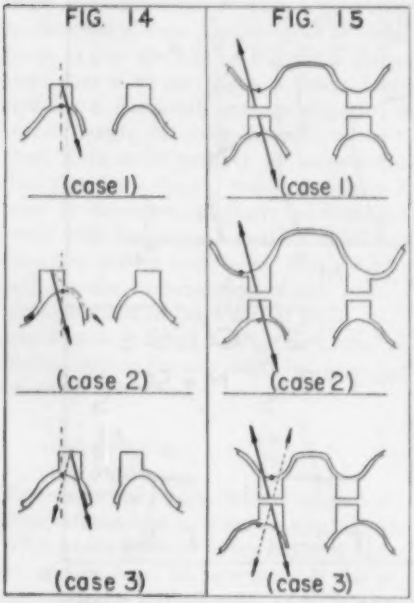

Fig. 14, 15 • Choice of force direction. Fig. 14: Placement of teeth relative to ridge. In Case 1, with teeth placed directly over ridges, force vector indicates a stable force. In Case 2, with teeth placed laterally off the ridge, same force falls outside ridge and produces an unstable condition; force must be shifted as indicated by dotted arrow. In Case 3, with teeth placed inside arch, force is stable; even force directed slightly outward might not tend to rotate denture. Fig. 15: Relation between upper and lower arches. In Case 1, with upper and lower arches of same width, upper and lower teeth may be placed directly over or under respective ridges. In Case 2, with upper arch wider than lower arch, lower teeth may be placed directly over ridge and upper teeth inside upper arch. In Case 3, with upper arch narrower than lower arch, teeth may be placed with upper teeth over ridge and lower teeth inside arch; solid arrows indicate direction of force stabilizing lower denture but not upper denture; dotted arrows represent force stabilizing both upper and lower dentures

according to the angle of the occlusal surface, enables the dentist to control one more of the factors important for success in complete denture prosthesis.

If a dentist strives for balanced occlusion, however, the slope of the occlusal

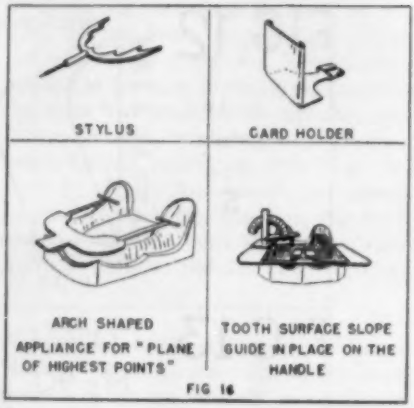
STYLUS
CARD HOLDER
ARCH SHAPED APPLIANCE FOR "PLANE OF HIGHEST POINTS"
TOOTH SURFACE SLOPE GUIDE IN PLACE ON THE HANDLE
FIG 16

Fig. 16 • Apparatus for determining "plane of highest points," measuring angle of chew and setting occlusal surface slope

surface is uniquely determined by the registrations and criteria of balance; but, by the use of this method, the actual direction of the masticatory forces that act on the balanced dentures before the teeth make contact can be determined. It is not, however, the purpose of this paper to discuss the various methods of incorporating these results into the construction of a complete denture prosthesis.

SETTING OF OCCLUSAL SURFACE SLOPE

The procedure for determining the best force direction and corresponding occlusal slope S for an angle of chew M must necessarily include a technic for measuring first the angle of chew and then setting the occlusal surface slope S at the desired angle. In order to measure the angle of chew, it is convenient to determine the plane of highest points of the lower jaw before making the lower biterim. This determination is easily made by placing an arch-shaped appliance (Fig. 16) on the ridge or baseplate so that the back free ends rest on the point above which will be the most posterior

tooth and the front rests on the anterior arch. The wax biterim is now made as usual, and the entire appliance except the front handle is embedded. The surface of this front handle determines the plane of highest points.

The tracing from which the angle of chew may be determined is made by attaching a card holder to the lower jaw and a stylus or marking device to the upper jaw (Fig. 16). The card holder can be attached to the plane-of-highest-points handle and the stylus to the upper biterim. Horizontal lines drawn on the paper card will be parallel to the plane of highest points and are then in the direction from which the angle of chew is to be measured. The angle of chew can now be read easily by the use of a protractor.

In order to set the occlusal surface slope at a given angle S with respect to the plane of highest points, the card holder is removed from the plane-of-higest-points handle and replaced by the occlusal surface slope guide (Fig. 16). Thus, by the use of this method the teeth can be set so that the "food forces of mastication" that act on the teeth during chewing will best stabilize the dentures.

TOLERANCE

It is important for the practicability of this system that an error in the value of the occlusal surface slope S, due to the probable error in measuring the angle of chew M, should be less than the degree of accuracy to which the occlusal surface slope S can be set. The angle of chew can be located by this method to within 4 degrees, so that the error from the true value cannot be greater than 2 degrees. Calculations of the effect of such an error in measuring M[15] show that for normal angles of chew compatible with the cuspal slope e, the error so produced in S is less than 1 degree, which is the degree of accuracy to which the occlusal surface slope can be set mechanically.

SUMMARY

One of the most important requirements of artificial dentures is stability under the "food forces of mastication." The requisite for lower denture stability is that the resultant direction of the force on the tooth shall fall inside the arch (Fig. 1), or more precisely, inside the projection of the ridge arch on the plane of highest points (Fig. 2), determined by the point on the posterior right ridge just below the most posterior tooth, the corresponding point on the left ridge and the highest point on the anterior arch.

The direction of the "food force of mastication" acting on the teeth is dependent on the motion of the occlusal surface through the food mass. The determination of this direction involves the actual motion of the jaw during chewing (Fig. 3 and 4) together with the slope of the occlusal surface. The former is ascertained from a tracing of the patient's chewing cycle; the latter is established by the dentist. The relationship between the direction of the force, the angle of chew and the occlusal slope is determined mathematically. If the patient's angle of chew M is known, in order to determine the proper angle S for the occlusal slope which will give a force in a specific predetermined direction F, the dentist inspects the chart for the S corresponding to the given M and desired F. It has been estimated that the probable error in this measurement is not greater than 1 degree.

The main decision confronting the dentist is the choice of the best possible force direction F for the particular case at hand. For the teeth placed directly over the ridge, the critical condition for stability is secured when the force is directed straight down, or more precisely, perpendicular to the horizontal plane of highest points. If the patient's angle of chew M is known, this critical occlusal

15. Wendell, G. V., and Severinghaus, W. L. Precision of measurements and precision problems. New York, (Columbia University) G. V. Wendell, 1938.

slope S_e can be found by use of the chart. When the teeth are not directly over the ridge, the important clinical factors influencing the decision are the relation of the tooth to its ridges and the relative stability of the upper and lower dentures. This knowledge, together with an understanding of denture stability, enables the dentist to choose the proper force direction for each particular case and thus to promote maximum stability of the dentures.

CONCLUSIONS

1. The stability of the lower denture during mastication depends largely on the direction of the "food force of mastication" acting on the teeth, which in turn depends on three factors: the angle of motion of chewing, the characteristics of the food, and the occlusal surface slope. For each angle of chew there are two critical occlusal surface slopes. Occlusal surface slopes between these two critical values will result in a force direction that tends to stabilize the lower denture. For the teeth placed directly over the ridge, these critical values are given by the expression:

$$\tan S_e = (1/2)\left[(1\text{-}K)\ \tan M \pm \sqrt{(1\text{-}K)^2 \tan^2 M - 4K}\right]$$

where M is the angle of chew and K a constant depending on the food and, for anatomic teeth, on the cuspal slope angle e. The angles S and M are directed with respect to the horizontal and e with respect to the cuspal peak plane.

2. The implications of the condition of stability are as follows: (a) For teeth placed directly over the ridge, in order that the "food force of mastication" be directed to stabilize the denture, that is, inside the lower ridge arch, $S>0$. (b) With flat-surfaced teeth placed directly over the ridge, for an angle of chew less than 41 degrees there is no tooth surface slope that will give a force direction tending to stabilize the lower denture. Corresponding statements can be made for anatomic teeth. (c) The formula gives two values for the critical occlusal slope. All occlusal slopes between these two values will result in a force direction that tends to stabilize the lower denture.

3. The direction of the "food force of mastication" acting on the occlusal surfaces is calculated from the formula:

$$\tan F = \frac{K \tan S + \tan (M\text{-}S)}{K - \tan (M\text{-}S) \tan S}$$

where S is the occlusal surface slope, M is the angle of chew, and K depends on the food and, for anatomic teeth, on the cuspal slope angle e. The angles F, S and M are considered in relation to the horizontal and e in relation to the cuspal peak plane.

4. The factors affecting the direction of the force applied through the food to the teeth during mastication are: (a) The mean occlusal surface slope S. For a given tooth form and angle of chew, as the occlusal slope S increases, the direction of the force becomes at first less vertical and more stable and then again more vertical and less stable. (b) The angle of chew M. As the angle of chew decreases, the force is confined closer to the vertical. (c) The angle e between the cusp slope and the cuspal peak plane of anatomic teeth. At a given angle of chew and occlusal slope, the steeper the cuspal slopes, the less "stable" is the direction of the force. (d) A constant K determined by the physical characteristics of the food.

5. The direction of force is controlled through control of its factors. The angle of chew M is determined by a tracing of the chewing cycle of the patient; the anatomic tooth factor, e, is fixed by the choice of tooth form. Thus the dentist, by controlling the occlusal surface slope S according to the chart, can direct the

forces of mastication acting on the occlusal surfaces to achieve the best possible results. The decision as to which direction of force will promote maximum stability during mastication depends on the particular patient involved. The clinical factors to be evaluated are those affecting the relation of the tooth to its respective ridge and the relative static retention of the dentures.

APPENDIX

I. DERIVATION OF CRITICAL TOOTH SLOPE AND DIRECTION OF FORCE FORMULAS

Given the vector $V_{h,v}$, we find $V_{t,n}$ by applying the two-dimensional rotation transformation matrix:

$$R = \begin{pmatrix} \cos S & \sin S \\ -\sin S & \cos S \end{pmatrix}$$

whence $V_{t,n} = RV_{h,v}$. However, $F_{t,n} = QV_{t,n}$ for $Q = \begin{pmatrix} -A & 0 \\ 0 & -B \end{pmatrix}$ (our equations of physics), and $F_{h,v} = R^{-1}F_{t,n}$, so that $F_{h,v} = R^{-1}QRV_{h,v}$. More explicitly:

1. $F_h = -(A \cos^2 S + B \sin^2 S)\, V_h + (-A + B) \sin S \cos S\, V_v$.

2. $F_v = (-A + B) \sin S \cos S\, V_h - (A \sin^2 S + B \cos^2 S)\, V_v$.

To satisfy the critical condition with a vertical force, $F_h = 0$ in equation 1, and after solving for tan S and simplifying, the result is that: (See Appendix III.)

3. $$\tan S_c = (\tfrac{1}{2})\left[(1\text{-}A/B) \tan M \pm \sqrt{(1\text{-}A/B)^2 \tan^2 M - 4A/B} \right]$$

where $\tan M = V_v/V_h$.

The actual relation between the tooth slope angle S and the direction of the resultant force can be derived as follows: If F is the angle of the force with respect to the horizontal, $\tan F = F_v/F_h$, and by substituting from equations 1 and 2 and simplifying, the result becomes:

4. $$\tan F = \frac{A/B \tan S + \tan (M\text{-}S)}{A/B - \tan (M\text{-}S) \tan S}$$

In order to rederive these formulas for the cusped teeth, the S + e and the S — e sloped surfaces are considered as each comprising one half of the total functional occlusal surface, so that the force on it is:

$$F_{h,v} = (\tfrac{1}{2})\left[F_{h,v}(S + e) + F_{h,v}(S - e) \right],$$

where the expressions for $F_{h,v}(S + e)$, $F_{h,v}(S - e)$ are as in equations 1 and 2. When these expressions are substituted and the resulting equations are simplified by the well-known trigonometric addition formulas, equations identical in form with equations 3 and 4 are obtained, except that A/B is now replaced by

$$K = A/B + \frac{T^2 [1 - (A/B)^2]}{1 + T^2 (A/B)}$$

where $T = \tan e$.

This expression for K can be expanded into the infinite series given in the text.

It can be shown that a surface of angle (S – e) considered alone will present the same force terms already given plus another term which, in the case of F_h (for M near $\pi/2$), will usually be in the negative direction. Similarly, a single surface of angle (S + e) will produce an additional term which will be positive.

II. VALUE OF CONSTANT A/B

Theoretically, for viscous fluid $A/B \simeq 2/3$, and for elastic rubber $A/B = 1/3$.

The latter value is derived as follows: Evidently in the case of elastic rubber, A is the shear modulus and B the Young's modulus of the substance. In terms of Poisson's ratio δ, $A/B = 1 \Big/ \left[2\ (1 + \delta) \right]$; but since for rubber $\delta = \frac{1}{2}$, it follows that $A/B = 1/3$.

These considerations are true, however, only for rubber near its unstrained position. What is necessary to know is the ratio of the shear and compression moduli under compression. It was found experimentally that the shear modulus is approximately independent of the amount of initial compression, even when the compression stress strain curve is in its exponential region. In this case for rubber with Young's modulus about 200 pounds per square inch, the ratio $A/B \simeq .05$ in order of magnitude, rather than the 1/3 predicted.

For the purposes of this study it was desirable to determine a value of A/B for those foods which cause the most difficulty for denture wearers, since a force that tends to stabilize the denture under the most difficult conditions will necessarily do so under less severe chewing conditions. Tough meat is probably the most difficult food for denture wearers to chew, and therefore A/B was determined for tough meat.

To determine the meaning of standard "tough" meat, the Bureau of Animal Industry, United States Department of Agriculture, was consulted. The Bureau prepared samples of meat which was of carcass grade "utility" and comprised the following beef muscles: semimembranosus, semitendinosus, biceps femoris and rectus femoris. After being aged for four days at 38° F., the meat was cooked in a constant temperature oven at 300° F. ± 2° F. until the center was at 145° F. The data relating to the tenderness were determined by the Warner-Bratzler shear machine and by the standard organoleptic method. The meat was rated as falling between the "tough" and "very tough" categories.

With the Tinius-Olsen stress-strain testing machine, measurements were made on this meat under compression of 100 to 200 pounds per square inch, the range of maximum chewing forces for denture wearers. The constant A/B was thus determined to be 0.14, the upper limit of the experimental values obtained, which thus would include the most troublesome food encountered during chewing.

III. DEPENDENCE OF DENTURE STABILITY ON ANTEROPOSTERIOR ANGLE OF CHEW

Actually, the limiting condition for stability is not that F_h be zero but rather that the component of the force F_p, in a plane perpendicular to the ridge line, be zero. When the ridge line is in the sagittal plane, then $F_p = F_h$, but usually the ridge makes an angle Θ with the sagittal plane. In order to obtain expressions for F_p, however, a curve tracing in the sagittal plane along the face also must be taken for a determination of the anteroposterior, or protrusive, angle of chew. This correction is proved to be negligible for angles of $\Theta \simeq 10°$, and its consideration is not warranted in the final results.

CHARTS AND THEIR USES

After the angle of chew M has been measured on the patient and the direction of force F likely to stabilize the denture most satisfactorily has been determined by clinical considerations, the occlusal surface slope S necessary to produce this desired direction of force can be obtained from the charts as follows: Chart 1 for

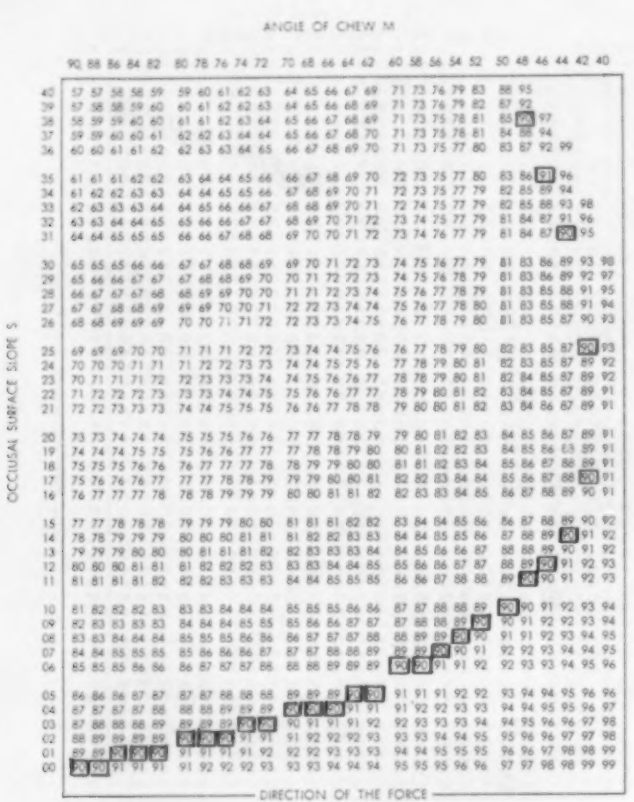

Chart 1. For flat teeth and teeth with cuspal slopes 0°-5°

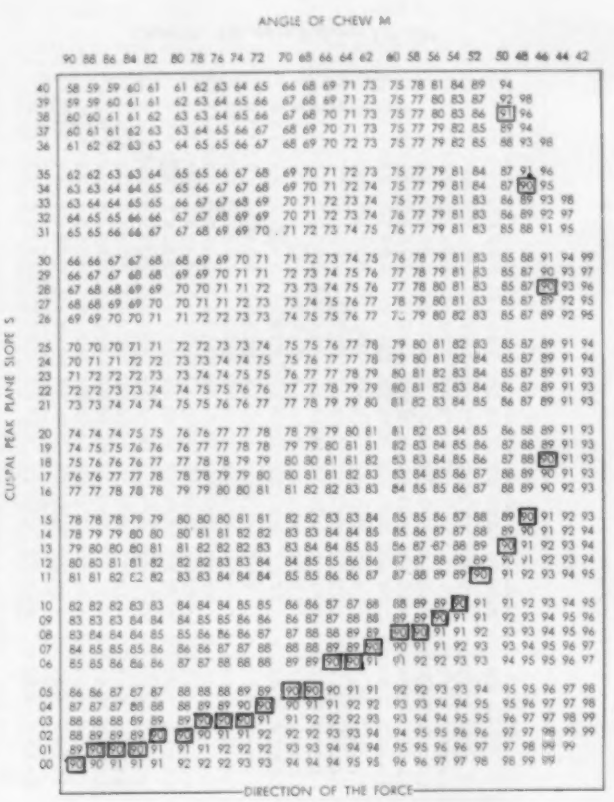
ANGLE OF CHEW M
90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42
CUSPAL PEAK PLANE SLOPE S
DIRECTION OF THE FORCE

Chart 2. For cuspal slopes 6°-12°

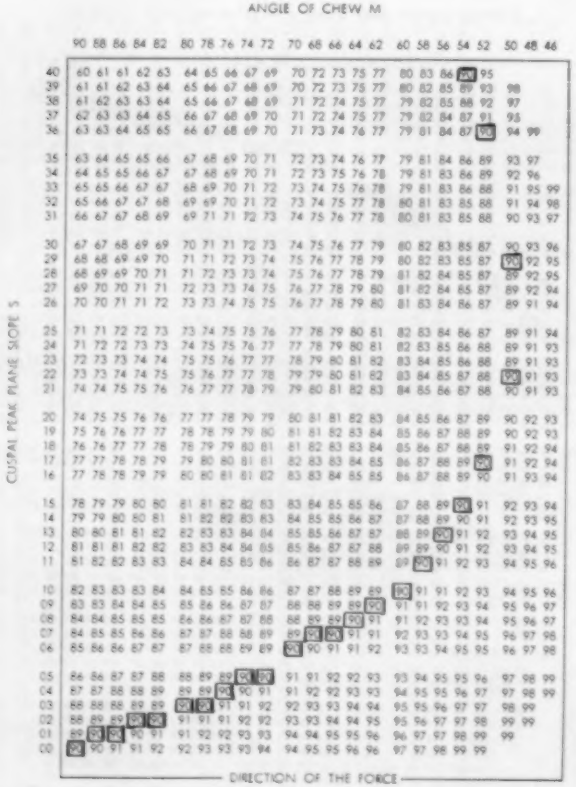

Chart 3. For cuspal slopes 13°-17°

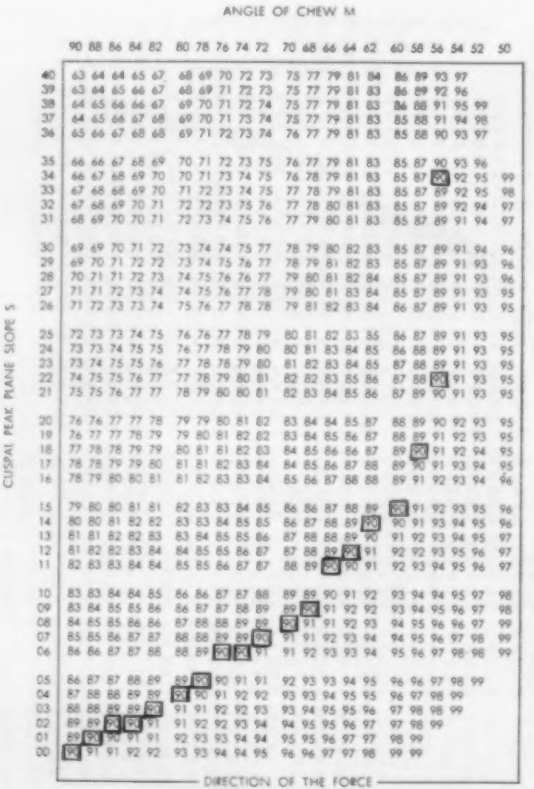

Chart 4. For cuspal slopes 18°-22°

ANGLE OF CHEW M

CUSPAL PEAK PLANE SLOPE S	90	88	86	84	82	80	78	76	74	72	70	68	66	64	62	60
40	66	67	69	70	71	72	74	76	77	79	81	83	85	88	91	94
39	67	68	69	70	71	73	74	76	77	79	81	83	85	88	90	93
38	67	68	69	71	72	73	74	76	78	79	81	83	85	87	90	93
37	68	69	70	71	72	73	75	76	78	79	81	83	85	87	20	92
36	68	69	70	71	73	74	75	76	78	80	81	83	85	87	89	92
35	69	70	71	72	73	74	75	77	78	80	81	83	85	87	89	92
34	69	70	71	72	73	75	76	77	78	80	82	83	85	87	89	91
33	70	71	72	73	74	75	76	77	79	80	82	83	85	87	89	91
32	70	71	72	73	74	75	77	78	79	80	82	84	85	87	89	91
31	71	72	73	74	75	76	77	78	79	81	82	84	85	87	89	91
30	71	72	73	74	75	76	77	79	80	81	82	84	86	87	89	91
29	72	73	74	75	76	77	78	79	80	81	83	84	86	87	89	91
28	72	73	74	75	76	77	78	79	81	82	83	84	86	88	89	91
27	73	74	75	76	77	78	79	80	81	82	83	85	86	88	89	91
26	74	74	75	76	77	78	79	80	81	83	84	85	86	88	20	91
25	74	75	76	77	78	79	80	81	82	83	84	85	87	88	90	91
24	75	76	76	77	78	79	80	81	82	83	85	86	87	88	90	92
23	75	76	77	78	79	80	81	82	83	84	85	86	87	89	90	92
22	76	77	78	78	79	80	81	82	83	84	85	87	88	89	90	92
21	77	77	78	79	80	81	82	83	84	85	86	87	88	89	91	92
20	77	78	79	80	80	81	82	83	84	85	86	87	89	20	91	92
19	78	79	79	80	81	82	83	84	85	86	87	88	89	90	91	93
18	78	79	80	81	82	82	83	84	85	86	87	88	89	91	92	93
17	79	80	81	81	82	83	84	85	86	87	88	89	20	91	92	93
16	80	80	81	82	83	84	84	85	86	87	88	89	90	91	93	94
15	80	81	82	83	83	84	85	86	87	88	89	20	91	92	93	94
14	81	82	82	83	84	85	86	86	87	88	89	90	91	92	93	95
13	82	82	83	84	85	85	86	87	88	89	20	91	92	93	94	95
12	82	83	84	84	85	86	87	88	88	89	90	91	92	93	94	95
11	83	84	84	85	86	87	87	88	89	20	91	92	93	94	95	96
10	84	84	85	86	86	87	88	89	20	90	91	92	93	94	95	96
09	84	85	86	86	87	88	89	89	90	91	92	93	94	95	96	97
08	85	86	86	87	88	88	89	20	91	92	92	93	94	95	96	97
07	85	86	87	88	88	89	20	91	91	92	93	94	95	96	97	98
06	86	87	88	88	89	20	90	91	92	93	94	94	95	96	97	98
05	87	87	88	89	20	90	91	92	93	93	94	95	96	97	98	99
04	87	88	89	20	90	91	92	92	93	94	95	96	96	97	98	99
03	88	89	89	90	91	92	92	93	94	95	95	96	97	98	99	
02	89	89	20	91	92	92	93	94	94	95	96	97	98	98	99	
01	89	20	91	91	92	93	94	94	95	96	97	97	98	99		
00	20	91	91	92	93	94	94	95	96	96	97	98	99			

DIRECTION OF THE FORCE

Chart 5. For cuspal slopes 23°-26°

ANGLE OF CHEW M

CUSPAL PEAK PLANE SLOPE S	90	88	86	84	82	80	78	76	74	72	70	68	66	64	62
40	71	72	74	75	77	78	80	82	84	86	88	20	93	95	98
39	71	72	74	75	77	78	80	82	84	86	88	90	93	95	98
38	70	73	74	76	77	79	80	82	84	85	88	90	92	95	97
37	72	73	74	76	77	79	80	82	84	86	88	90	92	95	97
36	72	73	75	76	78	79	81	82	84	86	88	90	92	94	97
35	73	74	75	76	78	79	81	82	84	86	88	90	92	94	97
34	73	74	75	77	78	80	81	83	84	86	88	90	92	94	96
33	73	75	76	77	78	80	81	83	84	86	88	90	92	94	96
32	74	75	76	77	79	80	82	83	85	86	88	90	92	94	96
31	74	75	77	78	79	80	82	83	85	86	88	90	92	94	96
30	75	76	77	78	79	81	82	84	85	87	88	90	92	94	96
29	75	76	77	79	80	81	82	84	85	87	88	90	92	94	96
28	76	77	78	79	80	81	83	84	86	87	89	90	92	94	96
27	76	77	78	79	81	82	83	84	86	87	89	90	92	94	96
26	76	78	79	80	81	82	83	85	86	88	89	91	92	94	96
25	77	78	79	80	81	83	84	85	86	88	89	91	92	94	96
24	77	78	80	81	82	83	84	85	87	88	20	91	93	94	96
23	78	79	80	81	82	83	85	86	87	88	90	91	93	94	96
22	78	79	80	82	83	84	85	86	87	89	90	92	93	95	96
21	79	80	81	82	83	84	85	87	88	89	90	92	93	95	96
20	79	80	81	82	84	85	86	87	88	89	91	92	94	95	97
19	80	81	82	83	84	85	86	87	89	20	91	92	94	95	97
18	80	81	82	83	84	86	87	88	89	90	91	93	94	96	97
17	81	82	83	84	85	86	87	88	89	91	92	93	94	96	97
16	81	82	83	84	85	86	88	89	20	91	92	93	95	96	98
15	82	83	84	85	86	87	88	89	90	91	93	94	95	96	98
14	82	83	84	85	86	87	88	20	91	92	93	94	95	97	98
13	83	84	85	86	87	88	89	90	91	92	93	95	96	97	98
12	83	84	85	86	87	88	89	90	92	93	94	95	96	97	99
11	84	85	86	87	88	89	20	91	92	93	94	95	97	98	99
10	85	85	86	87	88	89	90	91	92	94	95	96	97	98	99
09	85	86	87	88	89	20	91	92	93	94	95	96	97	99	
08	86	87	87	88	89	90	91	92	93	94	96	97	98	99	
07	86	87	88	89	20	91	92	93	94	95	96	97	98	99	
06	87	88	89	89	90	91	92	93	94	95	96	98	99		
05	87	88	89	20	91	92	93	94	95	96	97	98	99		
04	88	89	20	91	91	92	93	94	95	96	97	98			
03	88	89	90	91	92	93	94	95	96	97	98	99			
02	89	20	91	92	93	93	94	95	96	97	98	99			
01	89	90	91	92	93	94	95	96	97	98	99				
00	20	91	92	93	94	95	95	96	97	98	99				

DIRECTION OF THE FORCE

6. For cuspal slopes 27°-31°

ANGLE OF CHEW M

CUSPAL PEAK PLANE SLOPE S	90	88	86	84	82	80	78	76	74	72
40	76	78	80	81	83	85	87	89	91	93
39	77	78	80	82	83	85	87	89	91	93
38	77	78	80	82	83	85	87	89	91	93
37	77	79	80	82	84	85	87	89	91	93
36	77	79	80	82	84	85	87	89	91	93
35	77	79	81	82	84	86	87	89	91	93
34	78	79	81	82	84	86	87	89	91	93
33	78	79	81	83	84	86	88	89	91	93
32	78	80	81	83	84	86	88	89	91	93
31	79	80	81	83	85	86	88	20	91	93
30	79	80	82	83	85	86	88	90	91	93
29	79	81	82	83	85	87	88	90	92	93
28	81	82	84	85	87	88	89	91	93	94
27	80	81	83	84	85	87	89	90	92	94
26	80	81	83	84	86	87	89	90	92	94
25	80	82	83	85	86	87	89	91	92	94
24	81	82	83	85	86	88	89	91	92	94
23	81	82	84	85	87	88	89	91	93	94
22	81	83	84	85	87	88	20	91	93	94
21	82	83	84	86	87	89	90	91	93	95
20	82	83	85	86	87	89	90	92	93	95
19	82	84	85	86	88	89	91	92	93	95
18	83	84	85	87	88	89	91	92	94	95
17	83	84	86	87	88	20	91	93	94	95
16	84	85	86	87	89	90	91	93	94	96
15	84	85	86	88	89	90	92	93	95	96
14	84	86	87	88	89	91	92	93	95	96
13	85	86	87	88	20	91	92	94	95	97
12	85	86	88	89	90	91	93	94	95	97
11	86	87	88	89	90	92	93	94	96	97
10	86	87	88	20	91	92	93	95	96	97
09	86	88	89	90	91	92	94	95	96	98
08	87	88	89	90	92	93	94	95	97	98
07	87	88	20	91	92	93	94	96	97	98
06	88	89	90	91	92	94	95	96	97	99
05	88	89	90	92	93	94	95	96	98	99
04	88	20	91	92	93	94	96	97	98	99
03	89	90	91	92	94	95	96	97	98	
02	89	90	92	93	94	95	96	98	99	
01	20	91	92	93	94	96	97	98	99	
00	90	91	92	94	95	96	97	98		

DIRECTION OF THE FORCE

7. For cuspal slopes 32°-38°

Table • Cuspal slope for some brands of plastic artificial teeth

Brand name	Manufacturer	Value of cuspal slope
Micromold	Austenal Laboratories, Inc.	38
Trubyte	Dentists' Supply Co. of N.Y.	28
Denta Pearl	H. D. Justi & Son, Inc.	26
Luxene	Luxene, Inc.	35
Dura Blend	Myerson Tooth Corp.	21

flat teeth and teeth with cuspal slopes up through 5 degrees; Chart 2 for teeth with cuspal slopes from 6 degrees through 12 degrees; Chart 3, from 13 degrees through 17 degrees; Chart 4, from 18 degrees through 22 degrees; Chart 5, from 23 degrees through 26 degrees; Chart 6, from 27 degrees through 31 degrees; and Chart 7, from 32 degrees through 38 degrees. The table shows cuspal slopes for some brands of artificial teeth.

The top row of each chart gives the angles of chew M at intervals of 2 degrees, the probable accuracy obtainable in the measurement of the angle M. Below each angle M is a column of figures giving the range of force directions available for this particular M; and for any particular force direction F, the corresponding occlusal surface slope S is given in the left hand column of the chart. For example, on the chart for flat teeth, given the angle of chew of 72 degrees and an occlusal slope of 10 degrees, the desired force direction of 84 degrees is obtained.

A vertical force has the direction 90 degrees. For each angle of chew M, the vertical force direction 90 degrees is shown boxed; the corresponding occlusal surface slope is the least slope at which stability can be obtained for the teeth placed directly over the ridge. All angles of force above the 90 degrees box represent "stable" directions; all angles of force below the box represent "unstable" directions. For example, on the chart for cuspal slopes of 13 degrees to 17 degrees the critical occlusal slope for M = 64 degrees is 8 degrees. Occlusal slopes greater than 8 degrees result in "stable" forces; occlusal slopes less than 8 degrees result in "unstable" forces.

The details that govern the scope and limits of the chart are as follows:

1. Occlusal Slopes. Occlusal slopes greater than 40 degrees are, of course, impracticable; for occlusal slopes less than 0 degrees the direction of the force would be so "unstable" that it would rarely be useful.

2. Angles of Chew. The box of 90 degrees farthest to the right on each chart corresponds to the "limiting" angle of chew; since for smaller angles of chew there exists no stable force at all, the charts have been extended only 2 degrees to 4 degrees beyond this limiting point.

3. Force Directions. In general force directions over 99 degrees have been omitted, as these are at least 10 degrees beyond the point of stability and for the most part impractical.

Only near the limiting angle of chew does the range of the chart show the upper and lower critical occlusal surface slope limits; here for one angle of chew there are two boxed vertical force directions of 90 degrees. All force directions between these values are "stable"; those above the upper value and below the lower value are "unstable."

All values in the charts have been calculated to the nearest degree, the probable accuracy obtainable in setting the tooth mechanically or in choosing the angle of force. For this reason two occlusal surface angles occasionally correspond to the same force direction. In these cases it is usually safest to set the tooth at the larger occlusal surface slope value. The almost 5,500 values in these charts were calculated in less than 20 minutes by the National Bureau of Standards electronic mathematical computing machine.

503 Domer Avenue

Traumatic occlusion and mandible repositioning

Merle W. Ogle, D.D.S., U. S. Army

Occlusion and functional articulation of teeth are ultimate objectives in the field of dental science.[1,2] These aims are particularly applicable to operative dentistry, prosthodontics, orthodontics and periodontics.[3] In the words of Madsen,[4] "The subject is so basic and fundamental, it has been said that 'dentistry is occlusion.' "

McCollum[5] declares:

> Treatment of any organ must follow a diagnosis which depends on a thorough knowledge of the function of the organ. One of the most important things any surgeon should know about an organ on which he operates is its function and the effect of loss or impairment of this function.

Ideal occlusion is considered by Westbrook[6] to be:

> the state of occlusion in which the maximum number of teeth make contact simultaneously in centric relation, and in such a manner as to enable the contacting planes to remain in occlusion over the widest possible range in various excursive movements of the mandible.

Physiological occlusion is present when the periodontium is able to withstand the forces of occlusion without the initiation of pathological changes in the periodontal membrane.[7] Occlusal harmony and physiologic balance of supporting structures are more likely to exist when movements of the mandible during mastication are not inhibited by interferences.

Traumatic occlusion, in the opinion of Doxtater,[8] is an excessive stress brought to bear on the crown of a tooth or transmitted to a tooth from a bridge span or similar prosthetic appliance. This strain "acts directly on the periodontal membrane, and it is the ensuing disturbance in this tissue which constitutes the initial step in the development of periodontal disease."

Miller[9] states that traumatic occlusion exists when injury has resulted and also when there is a possibility that injury may result. Lundquist declares that an injurious agent may not be the only factor in disease processes since the origin of disease is usually related to two or more factors such as the immediate cause and the predisposition.[10]

Lieutenant Colonel, DC.

1. Greene, H. I.; Dreizen, Samuel, and Spies, T. D. Clinical survey of the incidence of impaired masticatory function in patients of a nutrition clinic. J.A.D.A. 39:561 Nov. 1949.

2. Lauritzen, A. G. Function, prime object of restorative dentistry: a definite procedure to obtain it. J.A.D.A. 42:523 May 1951.

3. Breitner, Carl. Tooth-supporting apparatus under occlusal changes. J Periodont. 13:72 July 1942.

4. Madsen, B. C. Occlusion: a cardinal consideration. J.A.D.A. 41:691 Dec. 1950.

5. McCollum, B. B. Consideration and treatment of the mouth as an organ of digestion. J.A.D.A. 16:1426 Aug. 1929.

6. Westbrook, J. C., Jr. A pattern of centric occlusion. J.A.D.A. 39:407 Oct. 1949.

7. Box, Harold K. Traumatic occlusion and traumatogenic occlusion. Oral Health 20:642 Dec. 1930.

8. Doxtater, L. W. Procedures in modern crown and bridge work. Brooklyn, Dental Items of Interest Publishing Co., 1931, p. 250.

9. Miller, S. C. Textbook of periodontia, ed. 2. Philadelphia, Blakiston Co., 1943, p. 296.

10. Lundquist, G. R. Connective tissue changes associated with variable occlusal stresses. J.A.D.A. & D. Cosmos 24:1577 Oct. 1937.

Although appropriate consideration must be given to specific areas responsible for clinical symptoms which are of concern to patients, Nuttall[11] is of the opinion that attention should be directed to recognition and correction of occlusal disharmonies of the general dentition.

ANALYSIS OF TRAUMATIC OCCLUSION

Cuspal interferences which inhibit normal or natural movements of the mandible also decrease masticatory efficiency and lead to traumatic occlusion. This occlusal trauma results when forces are in excess of supporting tissue tolerance. Traumatogenic force is distinguished from nontraumatogenic force by the direction of force, whether vertical or lateral, rather than by its magnitude. Lateral force is tolerated by investing tissues only to a limited extent because of the relatively small number of periodontal membrane fibers designed to resist such traumatogenic force.

The influence of cuspal interference and lateral stresses in traumatic occlusion and malocclusion has been amply illustrated by investigators.[12] Resultant pathologic conditions in the supporting structures of the teeth are generally accepted sequelae. Pathologic changes in supporting structures of teeth may occur when premature contacts are encountered in centric position and may result in lateral or eccentric positions or excursions. Therefore, malocclusion of the traumatic type can be defined simply by saying that such a condition exists when there are premature contacts in centric or eccentric occlusion.

It is not sufficient, however, merely to understand that breakdown of supporting structures of teeth is caused by stresses which are in excess of the tissue resistance. It is important also to observe and to analyze objectively the mechanisms involved in the production of traumatic occlusion and resultant supporting tissue breakdown. With adequate analysis the corrective procedures necessary tend to become obvious.

Before the mechanism involved in self-repositioning of the mandible to acquired centric occlusion is evaluated, it is important that this mechanism be recognized as a deviation from the normal events associated with mastication and normal mandibular excursions.

Normal movements of the mandible are concerned with crushing (the food bolus) and shearing. Lateral shearing movements of the mandible cause lower teeth to move down laterally and distally to reach what usually are end-to-end relationships with their upper antagonists. Normally, the degree of wear increases along inclined planes of upper and lower teeth and reaches its maximum at the peak of the cusps (Fig. 1). Thus the cusp of the young individual eventually loses its sharpness and with increase in wear and age becomes more rounded or flattened. Loss of tooth substance at the peak of cusps permits a more flat lateral excursion with less abrupt increase in eccentric vertical dimension. If marked increase in vertical dimension occurs with lateral excursion, undesirable stress may be transmitted to inclined planes and to supporting structures of teeth and temporomandibular joints.[13] Normally, such stresses do not exceed the ability of the tissues (periodontium and joints) to withstand them.

Abnormal mandibular movements are brought about by such factors, or combination of factors, as cuspal interferences which may exist on the working side (in lateral excursion), on the balance side (in mesial excursion) and in anterior regions (when there is overlapping of upper teeth).

11. Nuttall, E. B. Diagnosis and correction of occlusal disharmonies in preparation for fixed restorations. J.A.D.A. 44:399 April 1952.

12. Orban, Balint. Traumatic occlusion and gum inflammation. J. Periodont. 10:39 Jan. 1939.

13. Thompson, J. R., and Craddock, F. W. Functional analysis of occlusion. J.A.D.A. 39:404 Oct. 1949.

Although cuspal interference on the working side is generally recognized, it is important to recognize also the presence of cuspal interference or distraction on the balance side. When this "distraction" exists, its potential for lateral stress damage may exceed the potential on the working side. When lower teeth are moved to the working side to exert masticating force against their antagonists, they are in end-to-end relationships; supporting structures can withstand resultant stresses with more facility than can supporting structures of teeth on the balance side. On the balance side the lower teeth have been moved medially; if they cause distraction or interference, the stress exerted is in a more oblique or lateral direction. As equilibration is brought about in the working or lateral position by deliberate grinding or masticating wear, the distraction or interference in mesial excursion also should be equilibrated so that stresses are relieved (Fig. 2).

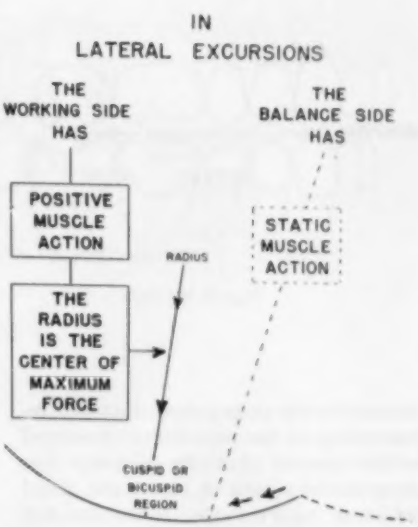

Fig. 2 • Wear is greater on working side planes than on balance side inclined planes. Interference (if present) of the balance side inclined planes and cusps retains its distraction or trauma potential

When extreme factors, such as overlapping of teeth or combinations of cuspal interference on working and balance sides, exist, a locked or semilocked bite may develop. Such conditions encourage or induce abnormal chopping movements of the mandible during mastication (Fig. 3). Some occlusions are "locked" by only a few interfering cusps and can be relieved by selective grinding.[14]

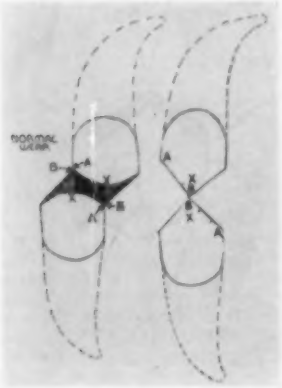

Figure 1

Chopping mandibular movements are abnormal since the force directed against the bolus of food is principally that of crushing. Shearing or lateral movements are usually inhibited by cuspal interferences. With chopping movements the area of cuspal wear varies with individuals; however, wear occurs evenly along inclined planes on mesial and distal aspects of the cusp (Fig. 4). This even wear (in contrast to normal wear) along inclined planes does not reduce sharpness of cusps but tends to accentuate the angle

14. Collett, H. A. Balancing the occlusion of partial dentures. J.A.D.A. 42:162 Feb. 1951.

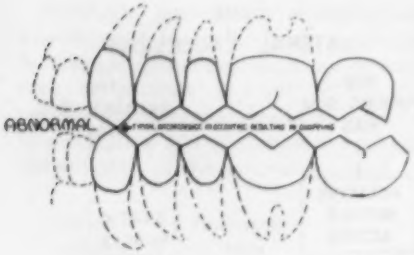

Figure 3

formed by the cusp planes. Forward repositioning of the mandible is governed by the amount of tooth substance lost along mesial planes of lower, and distal planes of upper cusps. When inclined planes are not abraded, anterior drift of teeth[15] also may permit this forward mandibular displacement.

Normal forward thrust of the mandible, due to action of the tongue and other muscles in manipulating, controlling and swallowing the bolus of food, plays an important part in this displacement (Fig. 5). The mandible also has a tendency to protrude in order to disengage interfering cusps on the working and balance sides.

One of the phases of forward mandibular displacement is the development of stresses in anterior regions of the upper and lower dentitions. When the mandible has begun or has reached this anterior acquired centric position, the following clinical situations may be noted:

When supporting structures are adequate, facets may appear on anterior teeth.

When supporting structures are inadequate, looseness of anterior teeth may develop.

When lower teeth remain in contact, orthodontic movement of upper teeth may occur.

Fibrous overgrowth of gingival tissue may appear, usually on the labial surfaces.

When response to treatment is inadequate, gingivitis[16] may occur.

There may also be other conditions indicating that the mandible is exerting unnatural or abnormal stresses because of its forward repositioned centric occlusion.

SUMMARY

Ideally, cuspal interference should have been prevented or corrected by early orthodontic treatment.

Stress in anterior regions usually cannot be correctly relieved by grinding the facets on labial surfaces of lower anterior teeth.

15. Strang, R. H. W. Textbook of orthodontia. Philadelphia, Lea & Febiger, 1943, p. 418.

16. Ingersoll, W. B., and Kerens, E. G. Treatment for excessive occlusal trauma or bruxism. J.A.D.A. 44: 22 Jan. 1952.

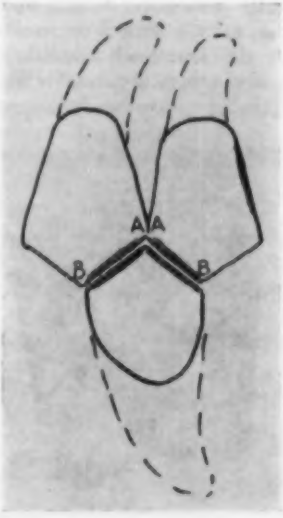

Fig. 4 • Result of abnormal wear such as "chopping"

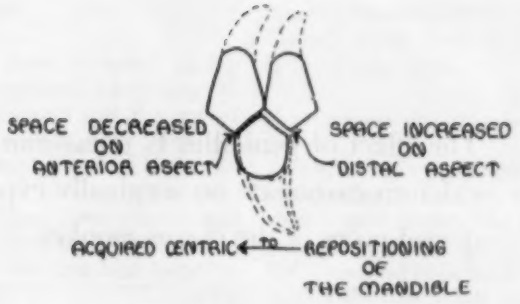

Figure 5

Cuspal interference often exists on the balance side and acts as a distraction in lateral excursion.

Cuspal interference responsible for occurrence of abnormal wear of inclined planes and cusps should be relieved.

Cuspal interference responsible for accentuated forward thrust of the mandible should be relieved.

In addition to development of anterior stress by forward repositioning of the mandible, cuspal interference and inhibition of normal lateral excursions not only decrease efficiency in mastication but may lead to supporting tissue destruction, temporomandibular joint anomalies or other pathologic changes.

Relief of cuspal interference by judicious grinding can result in functional occlusal equilibration.

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Progress of Science • Science has developed in the last three centuries from an intellectual pursuit of a small minority of curious and sometimes gifted amateurs to a professional activity of thousands of highly trained members of our population. It has changed from an activity in which the masses had essentially no interest to one that has become front page news. It originally gained many of its answers from practical men—miners, navigators, arms makers, barber-surgeons, herb collectors—and contributed little in return. It now draws little from technology and contributes heavily in return.

The sudden rise of science as an intellectual activity has naturally created social problems of first magnitude. Science has not only had a physical effect in changing man's material way of life but has resulted in mental upheaval as well, the latter a result of changes in man's understanding of nature and in his attitude toward knowledge. Bringing about such changes in the culturally short period of three centuries—and much of it in the past century—could not help but create problems defying solution. *Aaron J. Ihde, "Responsibility of the Scientist to Society," The Scientific Monthly 77:244 November 1953.*

The effect of penicillin G potassium plus calcium carbonate on surgically exposed dental pulps of the rhesus monkey

Alexander Seelig, D.D.S.; Richard C. Fowler, D.D.S., and David Tanchester, D.D.S., New York

This is the first report on a series of histological studies to determine the efficacy of the local application of antibiotics in the treatment of infected dental tissues. This particular study was proposed to investigate the use of penicillin G potassium plus calcium carbonate as an agent in controlling or combatting infection in the pulp.

A basic study of the reaction of dental pulps to surgical exposure was reported by Kreshover and Bevelander.[1] In their study, pulps of dogs' teeth were carefully exposed, and a piece of tin foil was placed over the pulp tissue. The remainder of the preparation was filled with gutta-percha or oxyphosphate of zinc cement. The animals were killed after varying periods of time, and histological sections were made of the teeth. The pulps of the various teeth revealed inflammatory and degenerative changes. The most striking finding was the presence in each case of an osteodentinlike structure. It was concluded that this structure was formed around the spicules of dentin introduced into the pulp by the operative procedures.

MATERIALS AND METHOD

A rhesus monkey was anesthetized by an intramuscular injection of sodium pentobarbital. Of the 20 teeth used in the experiment, 2 were not operated on and served as one type of control. The pulps of the remaining 18 teeth were exposed by grinding with stones and burs into the occlusal surfaces of the posterior teeth and into the labial surfaces of the anterior teeth. In each case a portion of the pulp was macerated by the bur. No attempt at asepsis or antisepsis was made. In 11 teeth, a thick paste of penicillin G potassium and calcium carbonate mixed with tap water was pushed into contact with the remaining portion of the pulp. The rest of the preparation was partially filled with the penicillin paste and covered with oxyphosphate of zinc cement. Of the other 7 teeth that had been operated on, zinc oxide and eugenol paste was placed in 4, oxyphosphate of zinc cement was placed in one, and 2 were left exposed with no further treatment. Seven days later the teeth were extracted and placed in Formalin. The teeth were sectioned and stained by the hematoxylin-eosin method.

Study aided in part by grants from the David Tanchester Dental Research Fund, Montefiore Hospital, and The Squibb Institute for Medical Research, New York City.

Montefiore Hospital, New York.

1. Kreshover, S. J., and Bevelander, Gerrit, Histopathology of the dental pulp of dogs following exposure. J. D. Res. 27:467 Aug. 1948.

OBSERVATIONS

Before the teeth were extracted, all fillings had been examined. The fillings of zinc oxide and eugenol and the one of oxyphosphate of cement, which served as controls, were intact. Of the 11 teeth in which penicillin G potassium and calcium carbonate had been placed and which had been covered with cement, 7 fillings were lost and one was loose. In the remaining 3, the cement covering was in place with no sign of leakage.

In the preparation of the teeth for microscopic sections, cuts were made through the center of the pulp chambers, dividing the teeth in half. All the teeth in which the penicillin G potassium and calcium carbonate had been placed over the pulps contained a white substance which filled a large portion of the prepared cavity. The pulp tissue was in direct contact with this white substance. When the tissues were run through increasing concentrations of alcohol and through ether alcohol, the white substance disappeared.

HISTOLOGICAL FINDINGS

Figure 1, left is a photomicrograph of a labiolingual section of the mandibular right central incisor. The cavity preparation, the extent of which can be seen in the figure, had been made from the labial surface through sound enamel and dentin into the pulp chamber. Oxyphosphate of zinc cement had been placed in the excavation in contact with the pulp tissue. It can be seen that the root canal is composed of degenerated pulp tissue. In the photomicrograph of a labial portion of the pulp (Fig. 1, right), fragments of cell debris are apparent. There are no signs of a physiological reaction to the cement.

Figure 2, left is a photomicrograph of a buccolingual section of the permanent

Fig. 1 • Left: Labiolingual section of mandibular right central incisor. Right: Portion of pulp from same section

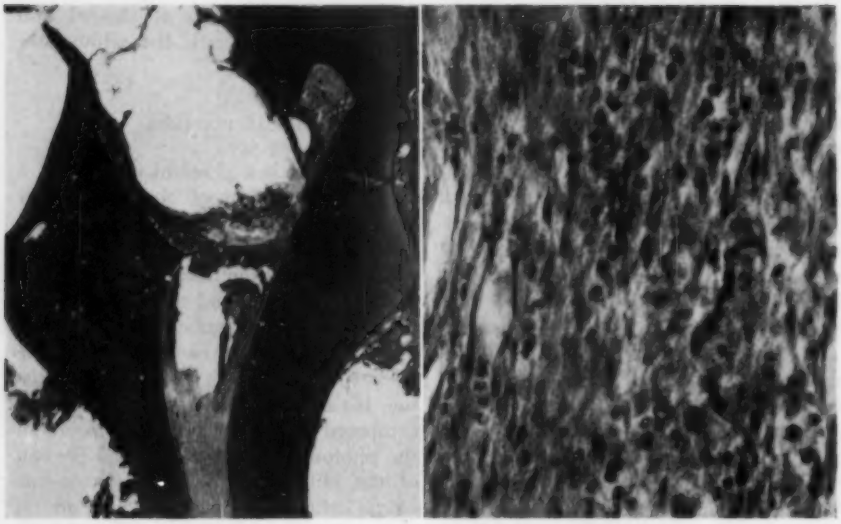

Fig. 2 • Left: Buccolingual section of permanent maxillary second molar tooth. Right: Typical portion of pulp from same section

maxillary second molar tooth. The excavation had been made from the occlusal surface through sound enamel and dentin into the pulp chamber. Zinc oxide and eugenol paste had been inserted. It is apparent that some of the buccal portion of the pulp chamber still remains. There is a pulp abscess in the pulp tissue of the lingual root. It can be observed that the odontoblasts have been destroyed and that a large portion of the pulp has been lost because of liquefaction necrosis.

In the photomicrograph of a typical portion of the pulp in the lingual root (Fig. 2, right), it can be observed that the region is infiltrated with many polymorphonuclear leukocytes and a protein exudate and also that the fibroblasts are poorly defined and are undergoing necrosis.

Figure 3, above is a photomicrograph of a buccolingual section of the permanent maxillary left second molar tooth. The preparation had been made through sound enamel and dentin. The bur had entered the pulp chamber and macerated the coronal portion. The floor of the pulp chamber had been partially drilled away. No attempt had been made to control the slight hemorrhage. A thick paste of penicillin G potassium and calcium carbonate mixed with tap water had been forced into the prepared cavity. Oxyphosphate of zinc cement had been placed over the paste. The cement covering had been lost during the seven days preceding the extraction of the tooth. It can be seen that the pulp chamber is filled with fibrin and a mass of polymorphonuclear leukocytes. Spicules of dentin are observable in the enlarged pulp chamber. An incomplete bridge is seen dividing the pulp chamber from the remaining pulp in the lingual root. No inflammatory process is evident in the photomicrograph.

Figure 3, center shows the bridge and the adjacent portion of the pulp in the same lingual root. The bridge is not of a uniform type of dentin and does not

cover the entire pulpal stump. The pulp tissue may be considered within the range of normal. It is apparent that the edema throughout this section has caused cells to be pushed against the dentinal walls. The cytoplasm of the cells appears compressed. There are no polymorphonuclear leukocytes present, nor is there evidence of hyperemia. Pulp tissue is observable up to the point where the pulp had been excised by the bur.

Figure 3, below is a photomicrograph of the dentin bridge observed in Figure 3, center. It can be observed that the bridge is composed of fragments of tubular dentin which had been introduced into the pulp tissue during the cavity preparation and that these fragments are held together by a homogeneous ground substance. Nuclei of fibroblasts can be seen trapped in this mass.

Figure 4, above is a photomicrograph of a buccolingual section of the maxillary right first bicuspid. The cavity preparation had been made from the occlusal surface through normal enamel and dentin into the pulp chamber. A thick paste of penicillin G potassium and calcium carbonate mixed with tap water had been forced into the prepared cavity. It can be seen that the pulp tissue in the lingual portion of the pulp chamber and in the lingual pulp horn is intact and normal and that the cavity preparation contains many polymorphonuclear leukocytes and a fibrinous exudate. Between this exudate and the remaining pulp tissue two bridges of dentin, one over the lingual stump and one over the buccal stump, can be observed.

Figure 4, center is a photomicrograph of the portion containing the buccal bridge observed in Figure 4, above. It can be seen that the bridge does not extend to the walls of the pulp canal. The tissue beneath and lateral to the bridge appears normal. There are no signs of inflammation or of foreign body reaction. The fibroblasts appear evenly distributed and the odontoblasts normal. The blood

Fig. 3 • Above: Buccolingual section of permanent maxillary left second molar tooth. Center: Portion of pulp from same section. Below: Dentin bridge observed in same portion of pulp

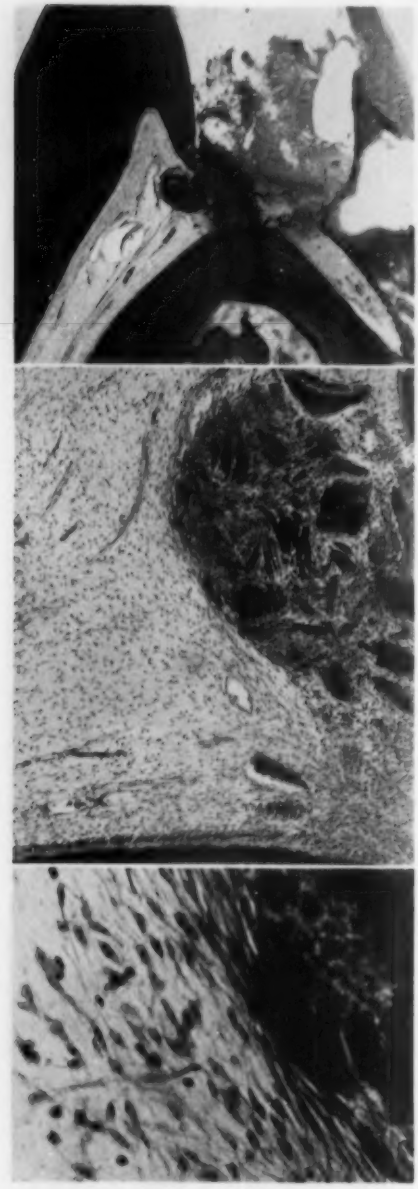

Fig. 4 • Above: Buccolingual section of maxillary right first bicuspid. Center: Portion containing the buccal bridge of same section. Below: Portion under dentin bridge of same portion

vessels are seen to be of normal size and number.

Figure 4, below is a photomicrograph of a portion under the dentin bridge observed in Figure 4, center. The fibroblasts in the pulp appear normal without any evidence of inflammation. They are seen to be in direct contact with the dentin bridge.

SUMMARY

In this experiment a paste of penicillin G potassium and calcium carbonate was placed in direct contact with the pulps of 11 teeth of a rhesus monkey. The enamel and dentin of all the teeth were sound, and the usual precautions observed in cavity preparation were taken. Neither aseptic nor antiseptic technics were followed. The paste, prepared by mixing penicillin G potassium and calcium carbonate with tap water, was forced into the preparations. In each case part of the coronal portion of the pulp was macerated by the bur.

Zinc oxide and eugenol paste and oxyphosphate of zinc cement were used as controls. Utilization of these materials on other monkeys resulted in pulpal responses similar to those described in this paper. When zinc oxide and eugenol paste was placed in contact with monkeys' pulps, an inflammatory response occurred with abscess formation. The placing of oxyphosphate of zinc cement may have resulted in the death of the pulp because of the production of an acid medium.

In all cases in which the paste of penicillin G potassium and calcium carbonate was placed under oxyphosphate of zinc cement, a normal pulp was observed. In each case a bridge of dentin was formed. In rare instances the pulp, although within the range of normal, showed slight edema and a few polymorphonuclear leukocytes in the tissue.

In summary, the results of the experiment were as follows:

1. The placing of zinc oxide and eugenol over macerated pulps of the teeth of the rhesus monkey resulted in abscess formation and resultant liquefaction necrosis.

2. The placing of oxyphosphate of zinc cement over macerated pulps of the teeth of the rhesus monkey resulted in loss of cellular substance, perhaps because of the acid in the cement.

3. The placing of penicillin G potassium and calcium carbonate as a paste mixed with tap water on the macerated pulps of the teeth of the rhesus monkey resulted in normal pulps. In almost all cases a bridge of dentin was formed.

4. The bridge, formed when the penicillin compound was placed over a pulp, was composed of chips of dentin held together by a homogeneous matrix.

5. The calcium carbonate in the penicillin mixture neutralized the orthophosphoric acid in the cement so that the penicillin acted in an alkaline medium.

CONCLUSION

The use of the penicillin compound as a prophylactic in the treatment of surgically exposed dental pulps seems to be indicated by the results of this experiment. Further study is necessary to indicate whether the penicillin compound can be used successfully in carious exposures where gross infection has been introduced into the pulp tissue.

Tumor Metastases • The invasive properties of leukocytes and macrophages depend on their being isolated single cells and on their highly developed ameboid motility. That cancer cells also possess ameboid motility was reported as long ago as 1863 by Virchow and has been demonstrated in tissue culture by many workers in recent times. These tissue culture studies have shown beyond all doubt that tumor cells in general are ameboid, whether they are of mesodermal or epithelial origin.

Neoplastic epithelial cells from carcinomas of man and of laboratory animals have been photographed with a moving picture camera and their rates of speed determined. Cells from breast cancers, for example, moved at an average of 0.7μ/min., with a maximum rate of 2.4μ/min. Cells from a carcinoma of the kidney attained a maximum rate of 4.4μ/min., while some cells from a mouse fibrosarcoma traveled at 6.2μ/min. Of additional interest is the observation that even tiny clusters of three to five epithelial cells from a rabbit carcinoma progressed as an ameboid unit. It was also demonstrated that the cells of benign epithelial tumors and even non-neoplastic glandular epithelial cells (from cystic disease of the breast) may be motile in tissue culture, provided that these cells are first forcibly detached from their companion cells. It appears probable, then, that the local invasiveness of cancer cells depends upon their ability to progress by ameboid movement.

Why, then, do not the cells of benign tumors or the cellular components of the various organs also invade, since they too, at least in some instances, are capable of ameboid motility? There is evidence to indicate that the cells of normal tissues and also the cells of benign tumors are so firmly attached to one another that they are unable to escape. In contrast, the cells of malignant tumors are often found in the body free from the parent tumor.

The reason that the cancer cells become free is their greatly reduced adhesiveness. Micromanipulation studies have shown that the magnitude of force required to separate a pair of normal squamous epithelial cells from each other is much greater than the force required to separate cancerous squamous cells. *Dale Rex Coman, Mechanisms Responsible for the Origin and Distribution of Blood-borne Tumor Metastases: A Review, Cancer Research, June 1953.*

COUNCIL ON FEDERAL DENTAL SERVICES

Dentistry's part in wartime health care planning

The Subcommittee on Civil Defense was requested by the Association's secretary to present a statement on dentistry's part in disaster and wartime health care planning before an agency of the Hoover Commission's Medical Task Force in accordance with an invitation from that agency, the Subcommittee on Over-all Planning for Medical Service in Time of All-out War. The Hoover Commission Medical Task Force has as one of its undertakings the development of a master plan for providing health care during a period of national disaster or all-out war.

Lloyd Rogers, president of the Detroit Receiving Hospital and a member of the Subcommittee on Civil Defense, who was designated by the chairman to appear before the Hoover Commission group, was unable to appear. Bernard J. Conway, secretary of the Subcommittee's parent body, the Council on Federal Dental Services, presented Dr. Rogers' statement in behalf of the Subcommittee on Civil Defense.

The American Dental Association has assigned the major responsibility for planning dentistry's activities during periods of military emergency to the Association's Council on Federal Dental Services and its Subcommittee on Civil Defense. The interests of all major agencies of the Association, however, are vitally involved in that planning. Dental health care, whether it be that of the civilian community or the military community, is the concern of the Council on Dental Health. The quality of the educational programs provided by the dental schools together with their capacity to graduate a sufficient number of dentists to care for the dental health needs of both the civilian and military communities is the concern of the Association's Council on Dental Education. Other agencies such as the Councils on Hospital Dental Service, Research, Legislation, and Dental Trade and Laboratory Relations must constantly review their programs in the light of the present military emergency and the possibility of all-out war.

The Council on Federal Dental Services has as one of its principal concerns today the maintenance of a proper balance between the dental manpower assigned to the military and that which remains to serve the civilian communities. The present necessity for a special liability law (P.L. 779) to obtain military dental officers illustrates how critical that concern is during a period of so-called limited emergency. Today's problems plus the experience in utilizing health personnel during World War II should be enough warning to the nation that a plan must be developed now for using health care personnel in the most efficient way during all-out war. The near certainty that this nation will be attacked, at least by air, if there should be another major international military conflict emphasizes the need for such a plan. The American Dental Association, furthermore, agrees with this group that, insofar as possible, the existing organization of health personnel and facilities should be the basis of the war organization.

The American Dental Association is convinced that the services of the dental profession are such vital assets of the nation that they should not be used ineffectively at any time. By their very nature the services of the health professions will be limited in their availability by the number of persons who are competent and qualified to offer those services to the public. The Association, therefore, has stressed that the dental profession must continue to develop, within acceptable profes-

sional and ethical standards, methods of practice that will make the most economic use of the dentist's chairside time. One of the outstanding contributions to the more efficient use of the dentist's time and efforts is the utilization of the services of the profession's auxiliaries: dental hygienists, dental assistants, and dental laboratory technicians. Educating the dentist to make the most effective use of the auxiliary services that are available to him is an example of the long-range aims of the Association toward making the most effective use of the professional services of dentists.

For time of total war, however, the nation certainly must have a well defined total health care plan that will assure the practical maximum in efficient use of dental health personnel and facilities. At a further point in this presentation, I shall discuss more comprehensively the integration of dentistry within the "complete medical plan" for time of total war or national disaster. At this point, I shall assure this group that the American Dental Association believes that within its present programs and policies there is a fundamental scheme for providing dental services most effectively during all-out war. The more critical problem is, of course, the contribution that dentistry should and must make to assist the medical profession to care for medical casualties after a disaster such as an atomic bombing of one or more of our great metropolitan areas.

Like this group, the Association's Subcommittee on Civil Defense has established some important premises. It is upon those premises that the Subcommittee is striving to assist in the development of the scope of dentistry's obligations and functions during a time of national military disaster. The Subcommittee has recognized as its starting point that at the time of catastrophe there will be insufficient medical personnel to give both immediate and continuing care to living casualties. At the same time the need for dentists to act in their normal professional capacities in treating casualties will be relatively negligible. The Association's civil defense planning, therefore, is at the present time principally devoted to determining what emergency medical services dentists may best perform and then developing methods for training them to perform those services. The Subcommittee on Civil Defense is convinced, however, that the functional integration of dentists into the over-all health care plan will be best achieved through cooperative planning by dentistry and medicine at the local level.

At the time the necessity for civil defense planning caused the federal government to establish the Federal Civil Defense Administration, the Association created its Subcommittee on Civil Defense. At about the same time the Association was asked to suggest the name of a dentist to be dental consultant to the Federal Civil Defense Administration. Dr. Russell W. Bunting, dean emeritus of the University of Michigan Dental School, was recommended and received the appointment. He has continued in that capacity up to the present time. Dr. Bunting is also a consultant to the Association's civil defense agency. It has been mainly through his tireless efforts that dentistry has achieved a prominent place in the federal plan.

Shortly after its creation, the Association's Subcommittee on Civil Defense decided that the most important phase of planning for dentistry's role in civil defense was to adapt the national, state, and local activities of dental societies to the governmental civil defense plans. The Subcommittee, therefore, recommended that the constituent (state and territorial) societies seek the appointment of a dentist as a member of the civil defense health service committee in each state and territory. At the same time the Subcommittee recommended that the American Dental Association seek the appointment of a dentist as an associate to the medical director of each regional office of the F.C.D.A. Both recommendations were adopted by the Association's House of Delegates and stand as official policy of the American Dental Association. The state societies have been relatively successful in their efforts to place dentists on state civil defense health service committees, but because of a lack of sufficient funds it has been impractical for the F.C.D.A. to employ dentists in the regional offices. Dentists have, however, been appointed to the advisory committees of the regional medical directors.

The constituent and component societies of the Association have also undertaken the task of establishing committees on civil defense within their own organizations or have assigned civil defense functions to one of their major committees. With a few exceptions, there is a practical counterpart of the Association's Subcommittee on Civil Defense in each state and territorial dental society.

At the present time the Association is concentrating its efforts on outlining the methods of training dentists to participate in civil defense activities. The Subcommittee on Civil Defense has been directed by the House of Delegates to develop plans for the participation of dentists in civil defense programs within the framework outlined by the F.C.D.A. and to advise the constituent dental societies on the development of programs at their own level and in component dental societies. The House of Delegates has also recommended to

the state and local societies and to the entire membership that members of the dental profession prepare themselves independently for participation in civil defense functions through enrollment in certified first aid courses and through the directed forms of training outlined in the F.C.D.A. manual, *The Dentist in Civil Defense*. In a recent bulletin to the Association's state and territorial dental societies, the Subcommittee on Civil Defense spelled out a general plan for training dentists for their civil defense responsibilities. In summary, the following is the substance of that bulletin.

The Federal Civil Defense Administration has been planning on the basis of a possible 75,000 to 100,000 casualties for each well placed atomic bomb on a large metropolitan area. With the development of an H-bomb these figures would rise tremendously. The fact that an unfriendly nation is developing such weapons must be faced. The Administrator of the Federal Civil Defense Administration has said that the use of the H-bomb means a greater degree of disaster with which organized civil defense must deal.

In any case, the number of people severely injured in any direct hit would be a burden beyond the capacity of all available medical and nursing services to provide even emergency care. It is recognized by the F.C.D.A. that in preparing to meet such an eventuality all possible sources of auxiliary medical services must be developed. Even then, the care of such a large number of casualties might be woefully inadequate. To outline the training of this auxiliary medical personnel, an excellent manual on *Emergency Medical Treatment* (TM-11-8) has been issued by the F.C.D.A. The training of nonmedical personnel in emergency casualty care is one of the most important phases of civil defense planning.

It is recognized that among the various types of workers available for such training, the 80,000 dentists of this country constitute an important group. Dentists are peculiarly fitted for such services. By their basic medical science training, their experience in handling patients in severe pain, and their association with medical men in the treatment of disease they are specially qualified to act as assistants to medical men in emergency casualty care. They are so recognized by the F.C.D.A. It is stated in the casualty service program that dentists will function as "auxiliary surgeons" and will be expected to treat shock, burns, fractures and contusions in all parts of the body, to perform venipuncture and administer blood, plasma and plasma volume expanders and assist in the care of radiation injuries.

If dentists are expected to act in such capacities, which are quite outside their normal professional services and in which they have had no practical experience, they must have training to prepare them for such an emergency. This training must be before the bomb falls and not after. If dentists are to be prepared to render these highly important services, they must begin to prepare now. In answer to the question, "What should dentists do in civil defense?" the answer is "prepare now to render efficient emergency medical services at the time of a catastrophe."

The question then arises, how may dentists obtain such training? It is generally accepted that the first step in casualty care is first aid. Therefore, training of all medical auxiliary personnel should begin with the standard Red Cross first-aid course. Because dentists have objected, and rightfully so, to taking the courses designed for people who have had no medical training, the American National Red Cross has arranged for special courses to be given to dental societies and groups of dentists. These will be taught on a professional level and, whenever possible, professional teachers will be provided. Every Red Cross chapter in the country has been notified of this program, and they are ready to set up such courses whenever the dentists request them.

For dentists, the first-aid training should be followed by advanced instruction in emergency casualty care. This may best be arranged by securing the cooperation of the local medical societies. Qualified medical teachers usually are available who will review and demonstrate the methods of treating shock, hemorrhage, burns and radiologic injuries. This is much easier to teach after the dental group has taken the Red Cross first-aid training. This medical instruction should follow the outlines given in F.C.D.A. manuals TM-11-8 and TM-11-9.

The casualty care training may be greatly assisted by the use of the teaching models which have been designed by the Navy dental staff at Bethesda, Maryland. Commander Niiranen, a dentist, has devised a synthetic arm containing tubes which simulate the vascular circulation. This affords the opportunity to practice the technics of venipuncture under almost lifelike conditions. This synthetic arm has been widely adopted for training nurses and auxiliary medical workers, and may be purchased through the proper channels on the Federal Contributions Program of the F.C.D.A. by which one-half of the cost is borne by the government.

The venipuncture training arm also includes a device for teaching blood typing. That de-

vice consists of a small block in which test tubes may be inserted. By the use of colored fluids and cross matching the methods of determining blood types may be taught. This, too, has had wide acceptance in the teaching of important emergency technics.

The Navy has also produced a plastic model of the neck for teaching the technics of trachcotomy and an abdomen model which may be used to demonstrate methods of controlling abdominal bleeding. These have been combined in a life-sized realistic *moulage* of a whole man designed for teaching casualty care technics. It is so constructed that bleeding from wounds in various parts of the body may be simulated and controlled under almost lifelike conditions. The model actually "bleeds" a blood-colored fluid which pulsates from the wounds. By this device the handling of various types of bodily incisions and wounds may be demonstrated, as well as the control of hemorrhage. The six problems depicted are a leg wound, an arm wound, an abdominal wound, a penetrating chest wound, choking caused by a foreign body in the throat and bleeding from the mouth caused by fracture of the jaw. This manikin which was also designed by Commander Victor Niiranen and the staff of the Naval dental school was prepared specially for the 1953 annual meeting of the American Dental Association and was exhibited in the civil defense booth at the Cleveland auditorium.

In addition to the development of training methods for practicing dentists, the Subcommittee on Civil Defense has also recommended that dental students be indoctrinated in emergency casualty care. The American Dental Association has recognized that civil defense planning must be on a long-range basis and has recommended that the dental schools establish within their curricula a course of civil defense training for dentists. The training programs in the schools, it is hoped, will be designed to equip the dental students to act as instructors in casualty care training as well as to indoctrinate them in the methods of handling emergency casualties. Eleven of the 43 dental schools have reported such training courses in effect.

In describing the Association's role in civil defense planning and activities I do not wish to create within this group an impression that the dental profession, as a whole, has developed an extraordinary enthusiasm for undertaking civil defense assignments. I can assure you, however, that there are many dentists who are selflessly dedicating their time and efforts voluntarily to the development of dentistry's role in civil defense. There is a growing interest in civil defense health care planning among dentists, but the stimulus to greater endeavor by members of the dental profession, as with all other groups of citizens, must come from local and state governments under the leadership of the Federal Civil Defense Administration.

In conclusion, I would like to call the attention of this committee to one item of the supplementary material which accompanies this statement. The description of the Detroit plan for training dentists in civil defense is particularly significant of the efforts of dentists in the local, the functional, level to integrate dentists within the anticipated emergency casualty operations. It is unfortunate that Dr. Lloyd Rogers was unable to appear at this time. He has been a pioneer in the development of both the Association's civil defense planning and the program for dentists in the Detroit area. The other materials which are submitted with this statement should prove helpful to this group in its broad undertaking.

I shall welcome any questions related to the activities of the Association's civil defense planning or other aspects of your field of exploration. In behalf of the American Dental Association, I thank this committee for the opportunity to appear before you. If in the future you have need for further consultation on dental matters within the scope of your studies, feel free to call upon the American Dental Association.

DETROIT PLAN FOR TRAINING DENTISTS IN CIVIL DEFENSE

The Detroit District Dental Society, at the request of Dr. Joseph G. Molner, director of the Medical and Public Health Division of the Detroit Office of Civil Defense, accepted the responsibility of formulating a plan for developing the role that dentists would be expected to assume in civil defense. A further responsibility was to train the dentists in preparation for integrating the dentists into the medical civil defense program.

Under the direction of Dr. Lloyd Rogers and Dr. Bruce Cook, chairman and co-chairman, respectively, of the Civil Defense Committee of the Society, a meeting of oral surgeons was held at which was determined the scope of the training program for dentists

and the immediate responsibility for conducting the program. After considerable deliberation it was decided that the following phases of medical treatment should be taught to all dentists as being of basic importance in the treatment of casualties:

1. Resuscitation
2. Burns
3. Shock
4. Fractures
5. Transfusions
6. Anesthesia
7. Care of food
8. Control of panic

It was further decided that the oral surgeons would conduct the training program by organizing into teaching teams, one team assigned to each of the subjects mentioned.

THE CASUALTY CARE STATION PROGRAM

The Casualty Care Station Section of the Medical Branch has the responsibility of developing the organization and facilities for providing definitive medical and surgical treatment on a scale without parallel in civil or military medical history. The tremendous number of casualties expected from a single atomic attack and the relatively few existing hospital facilities dictates the absolute necessity of developing an interim organization designed to accommodate casualties, particularly during the period immediately following the attack at which time prompt medical attention would save many lives which would otherwise be forfeited.

The plan of operation for casualty care stations (emergency hospitals) is a peripheral plan on a target area basis, which for purposes of planning is considered to be an area four miles wide running north and south along the river front section in Detroit. The metropolitan area surrounding the target area is divided into ten zones with each zone having from five to eight school buildings designated as casualty care stations. School buildings were chosen for this purpose because of their locations and available facilities. The activities of all casualty care stations in a zone are under the general direction of a zone leader who is a physician. Each casualty care station is organized individually which makes it possible to move the entire station as a unit, thereby creating a flexible plan of operation permitting maximum operation regardless of the actual location of a bomb drop.

Basically, the organization of a casualty care station consists of the following units: first aid, triage, shock, burns, surgery, and administration, which includes communications, supply, transportation, and record keeping. To staff these units, the following table or organization for each casualty care station is in effect.

No.	*Classification*
16	Physicians
10	Dentists
10	Pharmacists
31	Nurses
110	Medical aides
240	Medical rescue personnel
80	Ambulance personnel
40	Communications
10	Supply clerks
5	Administrative aides
552	Total

Dentists have been given specific duties in each of the casualty care station sections. In all cases a dentist has been assigned to head a section or to assist a physician at the head of a section.

TRAINING

For purposes of accommodating dentists in various parts of the city, seven training centers were chosen in hospitals located in a circle with Receiving Hospital as the center of the circle. Hospitals were chosen because of the available facilities which were required to conduct the training program. Training teams assigned to a specific topic were rotated through the training centers at weekly intervals. This enabled the dentists to receive the entire training program in a seven-week period by attending any one training center.

Training sessions were conducted in the evenings to enable most dentists to attend. Attendance was taken at all meetings and records kept at the office of the Detroit District Dental Society. Each dentist was issued a card listing the eight training topics. As the dentist attended a meeting the card was punched showing the specific meeting he attended.

The response to this training program has been excellent. The attendance records show that a total of over 400 dentists received a part or all of the training with as many as 125 dentists attending individual meetings.

Attendance at all of the training sessions entitles a dentist to receive a certificate of course completion from the Detroit Office of Civil Defense and a civil defense identification card. The staff of the dental society has been authorized to administer loyalty oaths and to

prepare the identification cards which are now being prepared for all those who are eligible to receive them.

There are now in activation six casualty care stations holding regular meetings of all personnel for purposes of training in the operation of the stations. In each of these stations dentists have been assigned to specific sections and are active in carrying out the functions of their sections. In addition to performing the operational functions assigned to them, the dentists are taking an active part in teaching auxiliary personnel in the various aspects of casualty care station operation. As more stations are activated the number of dentists participating will increase correspondingly until such a time as all are integrated into the medical civil defense program.

BUREAU OF LIBRARY AND INDEXING SERVICE

The American Dental Association Film Library

The films reviewed in this article are among those listed in the March, 1954, issue of THE JOURNAL. They are available at a rental fee of $2.50 to dental societies, study clubs, dental schools, hospital dental staffs and the armed services dental personnel. Since the number of prints of each title is necessarily limited, it is suggested that program chairmen plan their programs far enough in advance to insure availability.

FILM REVIEWS

Intraoral and Pharyngeal Movements • 16 mm., color, sound, approximately 650 ft., 16 minutes. Produced in 1951 by Harold M. Syrop, D.D.S., for the Dental Service of the Veterans Administration. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago. For purchase arrangements, write to Dr. Harold M. Syrop, Oral Diagnosis Section, Veterans Administration Hospital, Richmond, Va.

This film opens with a doctor discussing the medical findings and the treatment of a 24 year old male patient who has undergone nine operations for the removal of a chondrosarcoma. This radical surgery has left a large opening on the left side of the face through which it is possible to observe directly the movements of chewing, swallowing, speaking, yawning, coughing and smoking. It also enables the viewer to observe the tongue movements, bolus formation and the action of the epiglottis in swallowing.

The film concludes by showing how a prosthetic device enables the patient to pursue his daily activities and to participate in community functions.

The photography is good. All of the intraoral activities are seen clearly. This film is excellent for studying mouth functions and anatomy and therefore is suitable for integration into a course on anatomy. General practitioners, oral surgeons, maxillofacial surgeons and prosthodontists will find it instructional.

Alginate Impressions for Indirect Inlays • 16 mm., color, silent, 475 feet, at sound speed 13 minutes. Produced in 1951 by the University of Minnesota School of Dentistry. Demonstrated by William J. Simon, D.D.S., M.S.D. Photographed by James H. Rothenberger. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago. For purchase arrangements, write to Dr. William Crawford, Dean of the University of Minnesota, School of Dentistry, Minneapolis 14, Minn.

This film illustrates a technic for taking an alginate impression of teeth which have been prepared for inlay restorations. The preparation of the cavities in the lower central incisors and the right lateral incisor is shown as well as the cementation of inlays in place. The preparation of the compound impression, the trimming and positioning of the tray, the placing of the lower cast in a stone base and the scoring are all demonstrated.

The photography is very good and enables

the viewer to observe the steps clearly. The film is well organized and is suitable for use in a course on prosthodontics. General practitioners and hospital dental staffs may find it interesting. Prosthodontists may consider it too elementary.

A Method of Mixing Silicate Cement • 16 mm., color, sound, 8 minutes. Produced in 1953 by the American Dental Association's Council on Dental Research and the National Bureau of Standards. Procurable on loan ($2.50) from the American Dental Association Film Library, 222 E. Superior St., Chicago, or on loan or purchase from the Office of Scientific Publications of the National Bureau of Standards, Washington 25, D. C.

This film illustrates a new method of mixing silicate cement in a closed rubber container whereby the maximum amount of silicate powder is incorporated into a given quantity of liquid independent of atmospheric conditions. The rubber sack into which the liquid has been injected by means of a hypodermic syringe is submerged in water and the powder is kneaded by the operator. This new method is contrasted with the older method of mixing silicate cement on a glass slab and it proves more effective. By mixing in the rubber container it is possible to incorporate 1.7 Gm. of powder into 0.4 ml. of liquid without difficulty even when the outside temperature is 95 F. and the humidity is high.

This film is more suitable for informational than for teaching purposes. For use in teaching, the film should be supplemented by more detailed information on such things as the weight of powder used and the difference in the amount of powder that can be incorporated when the sealed method is used as against that when the glass slab method is used.

The photography is very good and the film is well organized.

General practitioners, hospital dental staffs, dental schools, and dental officers in the Armed Forces, especially those located in warm, damp climates, will find this film helpful.

COUNCIL ON DENTAL RESEARCH

List of certified dental materials

Samples of the certified zinc phosphate cements were recently retested by the American Dental Association Research Fellowship at the National Bureau of Standards under the supervision of that Bureau. These materials were found to comply with American Dental Association Specification No. 8 for Dental Zinc Phosphate Cements. This list supersedes that published in the December 1953 issue of THE JOURNAL.

CERTIFIED ZINC PHOSPHATE CEMENTS (A.D.A. SPECIFICATION NO. 8, FIRST REVISION)

Cement	*Manufacturer or distributor*
Ames Z-M	The W. V-B. Ames Co.
Bosworth's Zinc	Harry J. Bosworth Co.
Caulk Crown and Bridge; Petroid Improved; Tenacin	The L. D. Caulk Co.
Certicem	Lee S. Smith & Son Mfg. Co.
Fleck's Extraordinary	Mizzy, Inc.
Lang Crown Bridge and Inlay	Lang Dental Mfg. Co.
S-C	Stratford-Cookson Co.
Smith's	Lee S. Smith & Son Mfg. Co.
S. S. White Silver Improved; Zinc; Zinc Improved	The S. S. White Dental Mfg. Co.

COUNCIL ON DENTAL THERAPEUTICS

Council announces classification of additional products

The classification of products by the Council on Dental Therapeutics has been described in a previous report (J.A.D.A. 40:489 April 1950). The Council's program now provides for classification of products in Group A, Group B, Group C and Group D. Products are reconsidered periodically, and decisions are subject to change at any time that a substantial amount of new evidence becomes available. The files of the Council contain information on many drugs and dental cosmetics, and inquiries are welcome.

GROUP A

Listing of products in Group A means that at the time of their consideration, the items conformed with the provisions for acceptance established by the Council on Dental Therapeutics and adopted by the Board of Trustees and the House of Delegates of the American Dental Association. Items in this group will be listed in *Accepted Dental Remedies* and may use the Seal of Acceptance, unless otherwise provided.

The following additional products are classified in Group A:

Levarterenol (See A.D.R. ed. 19, p. 92)

Levophed (Winthrop-Stearns, Inc.): A brand of levarterenol.

Procaine HCl 2%, Tetracaine HCl 0.15%, Levarterenol 1:30,000 (See A.D.R. ed. 19, pages 24, 34, 92)

Novocain 2%, Pontocaine 0.15%, Levophed 1:30,000 (Cook-Waite Laboratories, Inc.) Each cc. is stated to contain procaine HCl 0.02 Gm.; tetracaine HCl, 0.0015 Gm.; levarterenol as bitartrate monohydrate, 0.000033 Gm.; sodium chloride, 0.004 Gm.; acetone sodium bisulfite, not more than 0.002 Gm.; and distilled water. Marketed in 2.2 cc. cartridges.

Procaine HCl 2%, Epinephrine 1:50,000 (See A.D.R. ed. 19, pages 24 and 91)

Procaine HCl 2%, Epinephrine 1:50,000 ("Mann" Chemical Company): Each cc. is stated to contain procaine HCl, 0.02 Gm.; epinephrine, 0.00002 Gm.; sodium chloride, 0.0045 Gm.; sodium bisulfite, 0.0020 Gm.; methylparaben, 0.001 Gm.; and distilled water. Marketed in 1.8 cc. cartridges.

Procaine HCl 2%, Tetracaine HCl 0.15%, Phenylephrine HCl 1:2,500 (See A.D.R. ed. 19, pages 24, 34, 93)

Procaine HCl 2%, Tetracaine HCl 0.15%, Phenylephrine HCl 1:2,500 ("Mann" Chemical Company): Each cc. is stated to contain procaine HCl, 0.02 Gm.; tetracaine HCl, 0.0015 Gm.; phenylephrine HCl, 0.0004 Gm.; sodium chloride, 0.0045 Gm.; sodium bisulfite, 0.002 Gm.; methylparaben, 0.001 Gm.; in distilled water. Marketed in 1.8 cc. cartridges.

Methylbenzethonium Chloride (See A.D.R. ed. 19, p. 86)

Sanford's "Di-Cet" Brand of Methylbenzethonium Chloride (Sanford and Son): A powder prepared for the cold disinfection of dental and surgical instruments, stated to contain in each 100 Gm. methylbenzethonium chloride, 24.4 Gm.; sodium carbonate monohydrate, 48.8 Gm.; sodium nitrite, 24.4 Gm.; and tri-

sodium ethylenediamine tetra-acetate monohydrate, 2.4 Gm. One package (about 4 Gm.) of the powder dissolved in one quart of water produces a 1:1,000 solution of methylbenzethonium chloride.

Penicillin Dental Cones (See A.D.R. ed. 19, p. 62)

Penicillin Dental Cones with Sulfacetamide Sodium, 15,000 Units (Novocol Chemical Mfg. Co., Inc.): Each cone is stated to contain crystalline penicillin sodium, 15,000 units; sulfacetamide sodium, 30 mg., and sulfacetamide, 2.5 mg.

Trichloroethylene, U.S.P. (See A.D.R. ed. 19, p. 16)

Trimar (Ohio Chemical & Surgical Equipment Co.): A brand of trichloroethylene, U.S.P.

As with other anesthetic agents, trichloroethylene should be used only by individuals who have acquired the necessary training and experience in its administration and in the treatment of possible complications.

Cyprane Inhaler Unit (Ohio Chemical & Surgical Equipment Co.): A device for administration of trichloroethylene in analgesic concentrations.

The unit consists of a metal chamber containing a baffle system by which air entering the chamber is directed over a wick saturated with trichloroethylene. The vapor-air mixture leaves the chamber through holes in a rotatable collar whose adjustment by the dentist permits further dilution of the trichloroethylene vapor with fresh air to the concentration desired. The final mixture passes by way of a flutter-valve into a rubber tube system, terminating in a nasal mask which is equipped with a spring-type exhalation valve, and with suitable accessories for retaining the mask in place.

The entire unit is mounted on a metal stand from which the vaporizing chamber and the rubber tubing may be removed for cleaning and filling.

The manufacturer states that at maximum setting of the adjustable collar the concentration of trichloroethylene delivered in inhaled air does not exceed 1.0 per cent by volume when the respiratory rate is 25 per minute, the tidal volume is 500 cc., and the temperature of the liquid in the chamber is 25° C.

The administration of trichloroethylene with this apparatus is controlled entirely by the dentist. This is in keeping with the Council's expressed attitude that the practice of allowing the patient to administer the drug by himself for the production of analgesia requires the constant vigilance of the responsible operator and is not recommended.

GROUP B

Listing of products in Group B means that there is insufficient evidence to justify their present acceptance, but there is reasonable evidence of their usefulness and safety. These products meet the other qualifications and standards established by the Council on Dental Therapeutics and the Division of Chemistry. It is the Council's opinion that Group B products may be promoted for special use and study.

GROUP C

Listing of products in Group C means that the evidence is so limited or inconclusive that the products cannot be accurately evaluated. It is the Council's opinion that Group C products require further study by qualified investigators.

GROUP D

Listing of products in Group D means that they are unacceptable because of their demonstrated inability to meet the standards outlined in the provisions for acceptance.

COUNCIL ON DENTAL EDUCATION

Hospital dental internships and residencies approved by the Council on Dental Education (revised to February, 1954)

The Council on Dental Education has been delegated by the American Dental Association with the responsibility of evaluating the advanced dental educational programs in hospitals and for listing as approved the programs which are conducted in accordance with the requirements approved by the House of Delegates. The requirements provide for the recognition of three types of dental internships—the straight, mixed, and rotating, and for a straight residency.

The straight internship or residency is defined as one which provides training in one major area of dental practice with its closely associated fields. The mixed internship is defined as one which provides training in two or more but not all of the major areas of dental practice, and the rotating internship is defined as one which includes training in all of the major areas of dental practice. In the column headed "Type of program approved," the mixed or rotating internships have been indicated by name but the straight internships and residencies, all of which include only one major area of dental practice, have been identified by the area in which training is offered. The applicant should write to the chief of dental service of the hospital in which he is interested for details relative to admission requirements and application procedure.

Appointments to Army and Navy hospitals are available only to commissioned dental officers in these services.

As additional programs are reviewed or as changes in the types of training provided in currently approved programs are made, supplemental listings will be published in THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION.

All of the programs listed have been approved by the Council on Dental Education. Those indicated by an asterisk (*) have been approved, but specific information regarding the type of program approved in these hospitals has not been included for one or more of the following reasons: (1) changes are being made in the type of training provided, (2) the Council is reviewing the current educational program conducted in the hospital, or (3) additional information has been requested in order to determine whether the program should be listed as providing training for one of the dental specialty boards.

To date, seven fields of dentistry have been recognized by the Council on Dental Education as specialties. The boards representing these dental specialties are as follows:

American Board of Dental Public Health
Dr. Philip E. Blackerby, Jr., Secretary
250 Champion Street
Battle Creek, Michigan

American Board of Oral Pathology
Dr. Paul E. Boyle, Secretary
Thomas W. Evans Museum and Dental Institute School of Dentistry
University of Pennsylvania
4001 Spruce Street
Philadelphia 4, Pennsylvania

American Board of Oral Surgery
Dr. Leslie M. FitzGerald
718 Roshek Building
Dubuque, Iowa

American Board of Orthodontics
Dr. C. Edward Martinek, Secretary
661 Fisher Building
Detroit 2, Michigan

American Board of Pedodontics
Dr. Ralph L. Ireland, Secretary
College of Dentistry
University of Nebraska
Lincoln, Nebraska

American Board of Periodontology
Dr. Harold J. Leonard, Secretary
745 Fifth Avenue
New York 22, New York

American Board of Prosthodontics
Dr. S. Howard Payne, Secretary
School of Dentistry
University of Buffalo
3435 Main Street
Buffalo 14, New York

The individual planning to prepare for a specialty board examination should write to the secretary of the board in which he is interested in order to acquaint himself with the specific requirements of that board and should consider it his responsibility to keep the specialty board informed of his plans and progress toward meeting the various requirements.

All of the specialty boards require a minimum of two years of advanced training, with the exception of the American Board of Oral Surgery which now requires three years. Among the training programs available for preparing candidates for specialty board examinations are the straight internships and residencies approved by the Council on Dental Education, and announcement has already been made that the approved straight internships and residencies in oral surgery are acceptable toward completion of the educational requirements of the American Board of Oral Surgery. Final arrangements are now being made for announcing the acceptability to the various specialty boards of the straight internships and residencies in the other specialty areas. As soon as these arrangements are completed a notice will be published in THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION.

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
ALABAMA				
Jefferson Hillman Hospital	Internship			
619 South 19th Street	Oral surgery	12	1	July
Birmingham 5, Alabama	Residency			
Dr. Joseph Lazansky	Oral surgery	24	5	July
Chief of Dental Service				
Veterans Administration Hospital	Residency			
700 South 19th Street	Oral surgery	36	2	July
Birmingham, Alabama				
Dr. Frederick W. Kraus,				
Chief of Dental Service				
Veterans Administration Hospital	Residency			
Tuskegee, Alabama	Oral surgery	36	2	July
Dr. Clifton O. Dummett,	Periodontics	36	2	July
Chief of Dental Service				

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
CALIFORNIA				
Herrick Memorial Hospital 2001 Dwight Way Berkeley 4, California Dr. Lyall O. Bishop Chief of Dental Service	Internship Oral surgery	 12	 1	 Sept.
General Hospital of Fresno County 4461 Ventura Boulevard Fresno 16, California Dr. A. W. Pearson, Chief of Dental Service	Internship Oral surgery	 12	 1	 Sept.
Los Angeles County General Hospital 1200 North State Street Los Angeles 33, California Dr. Paul H. Hamilton, Chief of Dental Service	Internship Oral surgery	 12	 10	 —
Highland Alameda County Hospital 2701 Fourteenth Avenue Oakland 6, California Dr. James H. Hechtman, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	 12 12	 1 1	 Sept. April
U. S. Naval Hospital 8750 Mountain Boulevard Oakland 14, California Capt. W. N. Van Zile, Chief of Dental Service	Internship Rotating Residency Oral surgery	 12 12	 3 2	 July July
U. S. Naval Hospital San Diego 34, California Capt. T. V. Joseph, Chief of Dental Service	Internship Rotating Residency Oral surgery	 12 24	 3 2	 July July
Letterman Army Hospital San Francisco 18, California Colonel Marhl H. Welch, Chief of Dental Service	Internship Rotating Residency Oral surgery Prosthodontics	 12 24 24	 6 1 1	 July July July
U. S. Public Health Service Hospital 15th Avenue and Lake Street San Francisco 18, California Dr. Robert H. Moore, Chief of Dental Service	Internship Rotating	 12	 4	 July
COLORADO				
Fitzsimons Army Hospital Denver, Colorado Brig. Gen. J. M. Epperly, Chief of Dental Service	Internship Rotating	 12	 6	 July
CONNECTICUT				
*Hartford Hospital 20 South Hudson Street Hartford, Connecticut Dr. Wilson R. Conran Chief of Dental Service				

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Norwich State Hospital Box 508 Norwich, Connecticut Dr. Thomas J. McCormick, Chief of Dental Service	Internship Rotating	12	1	July
St. Mary's Hospital 56 Franklin Street Waterbury 6, Connecticut Dr. Bernard A. O'Hara Chief of Dental Service	Internship Rotating	12	3	July
Waterbury Hospital 64 Robbins Street Waterbury 8, Connecticut Dr. Max N. Matzkin, Chief of Dental Service	Internship Rotating	12	2	July
DELAWARE The Delaware Hospital, Inc. 501 West 14th Street Wilmington, Delaware Dr. T. E. Hinkson, Chief of Dental Service	Internship Oral surgery	12	1	July
DISTRICT OF COLUMBIA Central Dispensary and Emergency Hospital 1711 New York Avenue Washington, D. C. Dr. Joseph Conlon, Chief of Dental Service	Internship Oral surgery	12	1	July
Episcopal Eye, Ear and Throat Hospital 1147 Fifteenth Street Washington, D. C. Dr. Harold W. Krogh, Chief of Dental Service	Internship Oral surgery	12	2	July
Gallinger Municipal Hospital 19th and Massachusetts Ave., S.E. Washington 3, D.C. Dr. Arthur Merril, Chief of Dental Service	Internship Oral surgery	12	2	July
George Washington University Hospital 901 Twenty-third Street, N.W. Washington, D. C. Dr. Karl H. Wood, Chief of Dental Service	Residency Oral surgery	12	3	July
St. Elizabeth's Hospital Nichols Avenue Washington 20, D. C. Dr. Earl B. Frank, Chief of Dental Service	Internship Rotating	12	3-4	July
Walter Reed Army Hospital Georgia Avenue at Butternut St., N.W. Washington 12, D. C. Colonel Arthur L. Irons, Chief of Dental Service	Internship Rotating Residency Oral surgery Prosthodontics	12 24 24	6 1 1	July July July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
FLORIDA				
*Florida State Hospital Chattahoochee, Florida Dr. John K. Cox, Chief of Dental Service				
Jackson Memorial Hospital 1000 N.W. 17th Street Miami 36, Florida Dr. Thomas J. Cook, Chief of Dental Service	Residency Oral surgery	24	2	—
GEORGIA				
Veterans Administration Hospital 5998 Peachtree Road, N.E. Atlanta, Georgia Dr. P. B. Stringer, Chief of Dental Service	Residency Oral surgery	24	2	July
ILLINOIS				
Children's Memorial Hospital 707 Fullerton Avenue Chicago, Illinois	Residency Pedodontics	12	2	July
U. S. Public Health Service Hospital 4141 North Clarendon Avenue Chicago, Illinois Dr. M. S. Rodgers, Chief of Dental Service	Internship Rotating	12	2	July
University of Chicago Clinics 950 East 59th Street Chicago 37, Illinois Dr. J. Roy Blayney, Chief of Dental Service	Internship Rotating	12	4	July
U. S. Naval Hospital Great Lakes Naval Training Center Great Lakes, Illinois Capt. A. H. Grunewald, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	4 1	July July
Carle Memorial Hospital 602 West University Avenue Urbana, Illinois Dr. Edward C. Thompson, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	1 1	July July
INDIANA				
Indianapolis General Hospital 960 Locke Street Indianapolis, Indiana Dr. J. Frank Hall, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	1 1	July July
IOWA				
Veterans Administration Hospital Highway 6 Iowa City, Iowa Dr. Duane Lovett, Chief of Dental Service	Internship Rotating Residency Prosthodontics	12 24	1 2	July July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
KANSAS				
University of Kansas Hospitals 39th and Rainbow Boulevard Kansas City, Kansas Dr. Ralph W. Edwards, Chief of Dental Service	Internship Oral surgery	12	1	July
KENTUCKY				
Louisville General Hospital 323 East Chestnut Street Louisville 2, Kentucky Dr. Richard M. Herd, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	2 1	July July
LOUISIANA				
Charity Hospital of Louisiana 1532 Tulane Avenue New Orleans 12, Louisiana Dr. F. J. Houghton, Chief Loyola University Dental Unit Dr. Leopold L. Levy, Chief Independent Dental Unit	Internship Oral surgery Residency Oral surgery	12 36	4 3	July July
U. S. Public Health Service Hospital 210 State Street New Orleans, Louisiana Dr. L. R. Etzenhouser, Chief of Dental Service	Internship Rotating	12	5	July
MARYLAND				
Mercy Hospital, Inc. North Calvert Street Baltimore 2, Maryland Dr. Joseph D. Fuseo, Chief of Dental Service	Internship Oral surgery	12	1	July
Provident Hospital and Free Dispensary 1514 Division Street Baltimore 17, Maryland Dr. Bruce H. Alleyne, Chief of Dental Service	Internship Oral surgery	12	1	July
Sinai Hospital of Baltimore, Inc. 1714 East Monument Street Baltimore 5, Maryland Dr. Alvin H. Berman, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	1 1	July July
U. S. Public Health Service Hospital Wyman Park Drive and 31st Street Baltimore 11, Maryland Dr. James O. Blythe, Chief of Dental Service	Internship Rotating	12	5	July
University of Maryland Hospital Redwood and Greene Streets Baltimore 1, Maryland Dr. Brice Dorsey, Chief of Dental Service	Internship Mixed Oral diagnosis Oral surgery Roentgenology Children's dentistry Oral pathology Anesthesia	12	2	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
National Naval Medical Center 8901 Wisconsin Avenue Bethesda 14, Maryland Capt. R. W. Taylor Chief of Dental Service	Residency Oral pathology	12	1	—
MASSACHUSETTS				
Beth Israel Hospital 330 Brookline Avenue Boston 15, Massachusetts Dr. Henry M. Goldman, Chief of Dental Service	Internship Oral surgery	12	3	July
Boston City Hospital 818 Harrison Avenue Boston, Massachusetts Dr. Stephen P. Mallett, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	4 2	July July
Children's Hospital 300 Longwood Avenue Boston, Massachusetts Dr. Paul K. Losch, Chief of Dental Service	Internship Pedodontics	12	1	July
Massachusetts General Hospital Fruit Street Boston 14, Massachusetts Dr. David Weisberger, Chief of Dental Service	Internship Mixed Oral surgery Oral medicine	12	2	July
Massachusetts Memorial Hospitals 750 Harrison Avenue Boston 18, Massachusetts Dr. Harold A. Carnes, Chief of Dental Service	Internship Oral surgery	12	1	—
U.S. Public Health Service Hospital 77 Warren Street Boston (Brighton), Massachusetts Dr. David Cooper, Chief of Dental Service	Internship Rotating	12	1	July
U. S. Naval Hospital Chelsea 50, Massachusetts Capt. Harry E. Denen, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	2 1	July July
The Memorial Hospital 119 Belmont Street Worcester 5, Massachusetts Dr. Robert W. Hornbaker, Chief of Dental Service	Internship Rotating	12	1	July
*Worcester City Hospital 71 Jaques Avenue Worcester 3, Massachusetts				

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
MICHIGAN				
Henry Ford Hospital 2799 West Grand Boulevard Detroit 2, Michigan Dr. Fred A. Henny, Chief of Dental Service	Residency Oral surgery	24	2	—
MINNESOTA				
University of Minnesota Hospitals 412 Delaware, S.E. Minneapolis 14, Minnesota Dr. Henry B. Clark, Jr., Chief of Dental Service	Residency Oral surgery	12	—	—
MISSOURI				
Kansas City General Hospital No. 1 24th and Cherry Streets Kansas City 8, Missouri Dr. D. E. Woodard, Chief of Dental Service	Residency Oral surgery	12	4	—
NEW JERSEY				
Medical Center 50 Baldwin Jersey City 4, New Jersey Dr. E. B. Zlonczewski Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	9-12 1	July July
Monmouth Memorial Hospital 3rd and Pavilion Avenues Long Branch, New Jersey Dr. Anson G. Hoyt, Chief of Dental Service	Internship Mixed Oral surgery Restorative dentistry	12	1	July
The Mountainside Hospital Glen Ridge and Montclair Montclair, New Jersey Dr. Albert Hopper, Chief of Dental Service	Internship Mixed Oral surgery Restorative dentistry	12	1	July
Newark City Hospital 116 Fairmount Avenue Newark 7, New Jersey Dr. Joseph D. Crecca, Chief of Dental Service	Internship Oral surgery	12	2	July
*North Hudson Hospital 4300 Park Avenue Weehawken, New Jersey Dr. Morris J. Boyer, Chief of Dental Service				
NEW YORK†				
Coney Island Hospital Ocean Parkway and Avenue Z Brooklyn 35, New York Dr. A. J. Abeloff, Chief of Dental Service	Internship Mixed Oral surgery Periodontics	12	1	July

†To be eligible for appointment as a dental intern or resident, the applicant must be licensed by the state or must be graduated within the past two years from a dental school registered by the State Department of Education and hold a permit to practice.

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Cumberland Hospital 39 Auburn Place Brooklyn 5, New York Dr. Stanley G. Standard, Chief of Dental Service	Internship Oral surgery	12	2	July
Greenpoint Hospital Kingsland and Skillman Avenues Brooklyn 11, New York Dr. Emanuel E. Blumenthal, Chief of Dental Service	Internship Oral surgery	12	2	July
Jewish Hospital of Brooklyn 555 Prospect Place Brooklyn, New York Dr. Harry E. Jerrold, Chief of Dental Service	Internship Mixed Oral surgery Oral diagnosis Orthodontics Periodontics	12	1	July
Kings County Medical Center Clarkson Avenue Brooklyn 3, New York Dr. Charles A. Wilkie, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 24	5 2	July July
Jewish Sanitarium and Hospital for Chronic Diseases 86 East 49th Street Brooklyn 3, New York Dr. Joseph J. Obst, Chief of Dental Service	Internship Rotating Residency *	12	4	July
Buffalo General Hospital 100 High Street Buffalo 3, New York Dr. Bernard G. Wakefield, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 24	1 1	July July
Children's Hospital of Buffalo 219 Bryant Street Buffalo 22, New York Dr. L. Halliday Meisburger, Chief of Dental Service	Internship Pedodontics Residency Pedodontics	12 12	1 1	July July
Millard Fillmore Hospital 875 Lafayette Avenue Buffalo 9, New York Dr. G. G. Pritchard, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 24	1 1	July July
Veterans Administration Hospital 3495 Bailey Avenue Buffalo 15, New York Dr. Russell W. Groh, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 24	1 2	July July
Meadowbrook Hospital Hempstead Turnpike Hempstead, New York Dr. William F. Harrigan, Chief of Dental Service	Residency Oral surgery	12	1	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Mary Immaculate Hospital 152-11 89th Avenue Jamaica, L.I., New York Dr. Joseph J. Stahl, Chief of Dental Service	Internship Rotating	12	3	July
Queens General Hospital 164th Street and Grand Central Parkway Jamaica L. I., New York Dr. George H. Dow, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	4 1	July July
Bellevue Hospital Second Avenue and 26th Street New York 67, New York Dr. William F. Harrigan, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	6 1	July July
Beth Israel Hospital 10-17 Livingston Place New York 3, New York Dr. Irving Salman, Chief of Dental Service	Internship Rotating	12	3	July
Harlem Hospital 136th Street and Lenox Avenue New York, New York Dr. T. H. Walters, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	5 2	July July
Hospital for Joint Diseases 1919 Madison Avenue New York 35, New York Dr. Alvin S. Nathan, Chief of Dental Service	Internship Mixed Oral surgery Orthodontics Periodontics	12	1	July
Jewish Memorial Hospital 196th Street and Broadway New York 34, New York Dr. Joseph Schroff, Chief of Dental Service	Internship Rotating	12	1	July
Lenox Hill Hospital 111 East 72nd Street New York 21, New York Dr. Fred Squire Dunn, Chief of Dental Service	Internship Rotating	12	1	July
Lincoln Hospital 320 Concord Avenue New York 54, New York Dr. M. H. Feldman, Chief of Dental Service	Internship Oral surgery	12	3	July
Metropolitan Hospital Welfare Island New York 17, New York Dr. Malcolm W. Carr, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	3 1	July July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Montefiore Hospital Gun Hill Road New York 67, New York Dr. David Tanchester, Chief of Dental Serivce	Internship Rotating	12	4	July
Mount Sinai Hospital Fifth Avenue and 100th Street New York 29, New York Dr. Leo Stern, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	4 1	July July
New York City Hospital Welfare Island New York, New York Dr. Pincus Sherman, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	1 1	July July
Flower and Fifth Avenue Hospitals 1 East 105th Street New York 29, New York Dr. John J. O'Keefe, Chief of Dental Service	Internship Oral surgery	12	1	July
New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19, New York Dr. Malcolm W. Carr, Chief of Dental Service	Internship Rotating	12	3	July
Roosevelt Hospital 428 West 59th Street New York 19, New York Dr. Clarence A. Dunn, Chief of Dental Service	Internship Oral surgery	12	1	July
*St Luke's Hospital Morningside Heights New York 25, New York Dr. Malcolm W. Carr, Chief of Dental Service				
Sydenham Hospital 565 Manhattan Avenue New York 27, New York Dr. Leo Tanzer, Chief of Dental Service	Internship Rotating	12	2	July
U. S. Naval Hospital St. Albans, Long Island, New York Capt. Charles F. Hoyt, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	5 2-5	July June
Strong Memorial Hospital 260 Crittenden Boulevard Rochester, New York Dr. Elmer J. Pommenter, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	3 2	July July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Sea View Hospital Brielle Avenue Staten Island 14, New York Dr. Irving E. Gruber, Chief of Dental Service	Internship Rotating Residency Prosthodontics	12 12	2-4 1	July July
U. S. Public Health Service Hospital Bay Street Stapleton, Staten Island, New York Dr. Robert A. Scroggie, Chief of Dental Service	Internship Rotating	12	5	July
Grassland Hospital Valhalla, New York Dr. Morris Eckhaus, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	3 1	July July
OHIO Cambridge State Hospital Cambridge, Ohio Dr. John B. Bennett, Chief of Dental Service	Internship Rotating	12	2	June
Cincinnati General Hospital 3231 Burnet Avenue Cincinnati 29, Ohio Dr. Robert M. Schell, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	6 2	July July
*Cleveland City Hospital 3395 Scranton Road Cleveland 9, Ohio Dr. Paul J. Auferheide, Chief of Dental Service				
Mt. Sinai Hospital of Cleveland 1800 East 105th Street Cleveland 15, Ohio Dr. Edward Reiter, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	1 1	July July
St. Luke's Hospital 11311 Shaker Boulevard Cleveland 4, Ohio Dr. C. P. Titus, Chief of Dental Service	Internship Mixed Oral surgery Children's dentistry Anesthesia Oral pathology Prosthodontics	12	1	July
The Miami Valley Hospital 134 Apple Avenue Dayton 9, Ohio Dr. H. V. Gieringer, Chief of Dental Service	Internship Rotating	12	1	July
Youngstown Hospital Association Oak Hill and Francis Streets Youngstown, Ohio Dr. D. D. Tomb, Chief of Dental Service	Internship Rotating	12	1	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
PENNSYLVANIA				
Veterans Administration Hospital Delafield Road Aspinwall 15, Pennsylvania Dr. Frederick M. Ewing, Chief of Dental Service	Residency Oral surgery	24	2	July
George F. Geisinger Memorial Hospital Danville, Pennsylvania Dr. James B. Smith, Chief of Dental Service	Internship Oral surgery Residency Oral surgery	12 12	1 1	July July
Children's Hospital of Philadelphia 1740 Bainbridge Street Philadelphia 46 Pennsylvania Dr. Raymond Werther, Chief of Dental Service	Residency Pedodontics	12	1	July
Hospital of the University of Pennsylvania 3400 Spruce Street Philadelphia 4, Pennsylvania Dr. Gladwyn Graham, Chief of Dental Service	Internship Oral surgery	12	1	July
Pennsylvania Hospital 8th and Spruce Streets Philadelphia 7, Pennsylvania Dr. James R. Cameron, Chief of Dental Service	Residency Oral surgery	24	2	—
Philadelphia General Hospital 34th and Curie Avenue Philadelphia 4, Pennsylvania Dr. Fred J. Lucchesi, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	8 2	July July
St. Christopher's Hospital for Children 2600 North Lawrence Street Philadelphia 33, Pennsylvania Dr. Ernest F. Ritsert, Chief of Dental Service	Internship Pedodontics	12	1	July
St. Joseph's Hospital 16th Street and Girard Avenue Philadelphia 30, Pennsylvania Dr. John P. Looby, Chief of Dental Service	Internship Rotating	12	1	July
U. S. Naval Hospital 17th and Pattison Avenues Philadelphia 45, Pennsylvania Capt. William A. Smith, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	3 2	July July
Valley Forge Army Hospital Phoenixville, Pennsylvania Lt. Col. William B. Simms, Chief of Dental Serivce	Internship Rotating	12	4	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Children's Hospital of Pittsburgh 125 De Soto Street Pittsburgh 13, Pennsylvania Dr. C. W. Hagan, Chief of Dental Service	Internship Pedodontics	12	1	July
Elizabeth Steel Magee Hospital Forbes and Halket Streets Pittsburgh, Pennsylvania Dr. W. Harry Archer, Chief of Dental Service	Residency Oral surgery	12	1	July
*St. Francis Hospital 45th Street at Pennsylvania Avenue Pittsburgh, Pennsylvania Dr. R. J. Englert, Chief of Dental Service				
Western State Psychiatric Institute and Clinic 3811 O'Hara Street Pittsburgh, Pennsylvania Dr. W. Harry Archer, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	1 1	July July
RHODE ISLAND Rhode Island Hospital 593 Eddy Street Providence 2, Rhode Island Dr. George J. E. Denicourt, Chief of Dental Service	Internship Rotating	12	1	July
TENNESSEE Baroness Erlanger Hospital 241 Wheil Street Chattanooga, Tennessee Dr. Ewing B. Connell, Chief of Dental Service	Internship Oral surgery	12	1	—
*Knoxville General Hospital Cleveland Place Knoxville 17, Tennessee Dr. Albert C. Harvey, Chief of Dental Service				
John Gaston City-County Hospital 860 Madison Avenue Memphis, Tennessee Dr. J. Roy Bourgoyne, Chief of Dental Service	Internship Oral surgery	12	1	March
George W. Hubbard Hospital of Meharry Medical College 1005 Eighteenth Avenue, North Nashville, Tennessee Dr. Martin L. Walton, Jr., Chief of Dental Service	Internship Rotating	12	2	July
TEXAS City County Hospital Oaklawn and Maple Avenues Dallas 4, Texas Dr. P. E. Williams, Chief of Dental Service	Internship Oral surgery	12	1	July

Hospital	Type of program approved	Length of program approved (months)	Number of positions available	Date the service begins
Brooke General Hospital Brooke Army Medical Center Fort Sam Houston, Texas Col. C. P. Canby, Chief of Dental Service	Internship Rotating	12	6	August
City-County Hospital 1500 South Main Street Fort Worth 4, Texas Dr. D. C. McRimmon, Chief of Dental Service	Internship Oral surgery	12	1	July
Veterans Administration Hospital 2002 Holcombe Boulevard Houston, Texas Dr. Spence A. Hutt, Chief of Dental Service	Internship Rotating Residency Prosthodontics	12 24	2 1	July July
VIRGINIA U. S. Public Health Service Hospital Hampton Boulevard Norfolk 9, Virginia Dr. Joseph E. Unsworth, Chief of Dental Service	Internship Rotating	12	3	July
U. S. Naval Hospital Portsmouth, Virginia Dr. Walter W. Crowe, Chief of Dental Service	Internship Rotating Residency Oral surgery	12 12	3 2	July July
Medical College of Virginia Hospital Division 1200 East Broad Street Richmond 19, Virginia Dr. Atwood M. Wash, Chief of Dental Service	Internship Oral surgery	12	2	July
WASHINGTON U. S. Public Health Service Hospital 14th South and Judkins Seattle 14, Washington Dr. George E. Jones, Chief of Dental Service	Internship Rotating	12	5	July
Madigan Army Hospital Tacoma, Washington Col. Ellsworth K. Kelly Chief of Dental Service	Internship Rotating	12	4	July
WISCONSIN Milwaukee Children's Hospital 721 North 17th Street Milwaukee 3, Wisconsin Dr. Francis J. Fleege, Chief of Dental Service	Residency Pedodontics	12	2	—
Veterans Administration Center Wood, Wisconsin Dr. L. E. Wilde, Chief of Dental Service	Residency Oral surgery Prosthodontics	36 24	3 2	July July

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

The 1953 survey of dental practice
V. Number of hours and weeks worked by the dentist; length of wait for an appointment

The mean number of weeks worked in 1952 by dentists who cooperated in this survey was 46.5, which is exactly the same as the figure for 1949 as determined by the 1950 Survey of the Dental Profession. It will be recalled that in both surveys dentists who graduated during the year under study were included as part of the sample, which tended to lower the average number of weeks worked. The median in both surveys was 48 weeks.

Table 27 shows how the number of weeks worked varied according to the age of the dentist. Most of the 1952 graduates are included in the 25 to 29 age group, bringing down the average for that group. This is particularly true of "salaried dentists," inasmuch as many of the 1952 graduates went directly into military service and are counted as salaried dentists. The longest average work year was reported by dentists in the 35 to 39 age group. Beyond that age group, a small but consistent decline in length of work year occurred with each succeeding age group, with dentists aged 75 and over reporting an average of 45.5 weeks.

There is little difference in number of weeks worked according to type of practice, except that periodontists and prosthodontists averaged about four weeks less than dentists in other types of practice (Table 28). Apparently the means for these two specialties were brought down by a few dentists reporting very short work years, because the difference between medians is considerably less.

Although the most common length of vacation for independent dentists was two weeks (28.6 per cent), dentists reporting three- and four-week vacations combined were more numerous (33.6 per cent), as shown in Table 29. A sufficient number of dentists took longer vaca-

Table 27 • Mean number of weeks worked in 1953, by age of dentist

Age	Mean number of weeks worked by		
	All dentists	Independent dentists	Salaried dentists
25-29	39.4	40.8	33.9
30-34	46.9	47.4	44.8
35-39	47.8	48.0	46.4
40-44	47.7	47.7	47.3
45-49	47.5	47.5	
50-54	47.0	47.1	46.3
55-59	46.3	46.3	
60-64	46.2	46.1	
65-69	45.7	45.5	45.5
70-74	45.8	46.4	
75-	45.5	45.1	
All ages	46.5	46.9	42.5

The first four articles in this series appeared in The Journal for December 1953 and January, February and April 1954.

Table 28 • Average number of weeks worked in dental office by independent dentists in 1952, by type of practice

Type of practice	Number of weeks worked	
	Mean	Median
General practitioner	46.9	48
Specialist	46.2	48
Oral surgeon	47.0	48
Orthodontist	47.4	48
Pedodontist	45.9	47
Periodontist	42.9	46
Prosthodontist	43.2	45
All independent dentists	46.9	48

Table 29 • Percentage distribution of independent dentists by number of weeks on vacation in 1952

No. of weeks	Per cent of dentists	Cumulative per cent
0	8.9	8.9
1	7.2	16.1
2	28.6	14.7
3	15.9	50.6
4	17.7	78.3
5	5.6	83.9
6	6.4	90.3
7	2.4	92.7
8	3.0	95.7
9	0.5	96.2
10	1.3	97.5
11	0.2	97.7
12	1.3	99.0
13 or more	1.0	100.0

Table 30 • Percentage distribution of dentists by number of days absent from work in 1952 because of illness or other disability

Number of days absent	Per cent of dentists	Cumulative per cent
0	51.2	51.2
1	4.2	55.4
2	7.4	62.8
3	5.9	68.7
4	4.2	72.9
5	5.0	77.9
6	2.4	80.3
7	4.6	84.9
8-12	5.9	90.8
13-17	3.7	94.5
18-22	1.7	96.2
23-27	.2	96.4
28-32	1.2	97.6
33-44	.5	98.1
45-54	.4	98.5
55-64	.5	99.0
65-74	.2	99.2
75-84	.1	99.3
85-94	.2	99.5
95-104	.2	99.7
105 and more	.3	100.0

tions to bring the mean to 3.4 weeks and the median to three weeks.

Not all of the year is accounted for by weeks worked and weeks spent on vacation. Some dentists have other occupations to which they devote part of the year, and illness is another factor to be taken into account.

Almost half (48.8 per cent) of the dentists participating in this survey lost some time during 1952 because of illness or other disability (Table 30). There was much variation in number of days lost, with two days being reported by more respondents (7.4 per cent) than any other number. A total of 15.1 per cent reported more than a week of absence because of illness or other disability.

The mean number of office hours per week reported by independent dentists in this survey was 43.3 (Table 31). The questionnaire asked the dentist to estimate the average number of office hours per week in 1952. In the 1950 Survey of the Dental Profession, dentists were asked to keep a record of office hours during a specified week in April. The mean reported in that survey was 42.2 hours in the office. The mean number of chairside hours in the 1953 and 1950 surveys was 34.9 and 33.0 hours, respectively, and laboratory hours were 4.6 and 3.8.

Periodontists and prosthodontists, who

Table 31 • Mean number of office hours of independent dentists per week in 1952, by type of practice and type of activity

Type of activity	Type of practice							
	General practitioner	Specialist	Oral surgeon	Ortho-dontist	Pedo-dontist	Perio-dontist	Prostho-dontist	All types of practice
Chairside	35.3	30.8	32.5	30.6	34.6	32.7	23.8	34.9
Laboratory	4.6	5.2	.1	7.5	1.4	1.2	10.0	4.6
Other hours in office	3.7	3.7	5.0	3.6	2.6	3.1	3.5	3.8
Total	43.6	39.7	37.6	41.7	38.6	37.0	37.3	43.3

Table 32 • Percentage distribution of independent dentists by number of office hours per week in 1952

Number of hours	Per cent of dentists	Cumulative per cent
-29	3.2	3.2
30-34	8.2	11.4
35-39	14.9	26.3
40-44	31.0	57.3
45-49	19.4	76.7
50-54	13.2	89.9
55-59	4.9	94.8
60-	5.2	100.0

Table 34 • Average wait for an appointment, by type of practice

Type of practice	Mean no. of days	Median
General practitioner	13.7	One week
Specialist	11.8	One week
Oral surgeon	3.6	One or two days
Orthodontist	12.6	Two weeks
Pedodontist	24.4	Four weeks
Periodontist	13.6	Two weeks
Prosthodontist	8.4	One or two days
All independent dentists	13.6	One week

reported working fewest weeks per year, also reported working relatively short weeks. In general, specialists put in fewer hours per week than general practitioners. Among specialists, orthodontists worked most hours per week.

As would be expected, there was considerable variation in amount of time spent in laboratory work according to type of practice. Prosthodontists spent nearly 27 per cent of their office time in the laboratory, compared to about 11 per cent for all independent dentists.

Table 32 presents the distribution of independent dentists according to office hours per week. Almost one fourth (23.3 per cent) of all dentists responding indicated they spent 50 hours or more per week in the office.

An attempt was made in this survey to determine how long patients were required to wait for the initial appointment in a course of treatment. The question was worded as follows: "During 1952, approximately how long did your average patient have to wait for an appointment (excluding emergency cases and patients who have been scheduled for a series of treatments)?"

Table 33 • Percentage distribution of independent dentists, by average wait for an appointment

Average wait	Per cent of dentists	Cumulative per cent
No waiting	1.0	1.0
One or two days	16.6	17.6
Three to six days	16.5	34.1
One week	21.6	55.7
Two weeks	17.0	72.7
Three weeks	9.6	82.3
Four weeks	5.6	87.9
Five weeks	2.8	90.7
Six weeks or more	9.3	100.0

The distribution of replies made by independent dentists to this question is given in Table 33. The most common length of wait reported was one week, and 55.7 per cent answered one week or less. The median was one week but the mean was considerably higher, 13.6 days, because of a scattering of dentists who reported very long waits, including the 9.3 per cent who reported average wait of six weeks or more. (In computing the mean number of days, the "six weeks or more" category was given a value of 45 days.)

Table 34 shows how the average length of wait varied according to type of practice. The oral surgeon, many of whose patients require emergency treatment, reported by far the shortest waiting period, followed by the prosthodontist. The pedodontist reported by far the longest average wait. The mean wait reported by orthodontists and periodontists did not differ greatly from the over-all mean.

The analysis of this survey will be continued in subsequent issues of THE JOURNAL.

B. Duane Moen, Director

COUNCIL ON LEGISLATION

Association testifies on OASI

J. Claude Earnest, of Monroe, La., vice-chairman of the Council on Legislation, presented the following testimony to the Ways and Means Committee of the House of Representatives on April 9, 1954. He was accompanied by Mr. Francis J. Garvey, secretary of the Council.

My name is J. Claude Earnest. I am a self-employed practicing dentist of Monroe, La. I am a member of the House of Delegates of the American Dental Association and vice-chairman of the Association's Council on Legislation. I am here today to present to the Congress the views of the Association with respect to the proposed inclusion of self-employed dentists in the Old Age and Survivors Insurance System.

The present policy of the Association was adopted by the House of Delegates in 1949 and may be found on pages 265 and 266 of the *Transactions* of the Association for that year. It reads as follows:

"*Whereas,* the House of Delegates in 1948 directed the Council on Legislation to seek to have self-employed dentists included in the benefits of the Old Age and Survivors' Insurance Program, and

Whereas, further study of this question has indicated that the expansion of the Social Security System to self-employed persons upon presently proposed bases would tend to jeopardize the financial security of the country, and

Whereas, the real security of the professionally self-employed lies within the individual and in his contribution to the community rather than in any government sponsored system of old age insurance, now therefore be it

Resolved, that the policy expressed by the 1948 House of Delegates is hereby rescinded, and be it further

Resolved, that the Council on Legislation is directed to seek amendments eliminating dentistry from any proposals to extend old age and survivors' insurance to the self-employed."

Permit me to give you some figures and to tell you something about the American Dental Association so that you may be able to evaluate our policy. There are, at the present time, in the United States, approximately 83,000 persons who are engaged in the practice of dentistry. There are approximately 10,000 others still living who have graduated from dental schools but who have either retired or turned to other occupations. For practical purposes, therefore, we may say there are 83,000 dentists in the United States. Of this number, 70,361, or 84.8 per cent, are members of the American Dental Association. Obviously, therefore, the Association has the right to speak for the dentists of this country.

You may be interested in the mechanics by which policies of the Association are adopted. The policy making body of the Association is known as the House of Delegates. It consists of elected representatives from every state, territory, and possession of the United States. Members of the House of Delegates are chosen within each state or territory on the basis of number of members of the Association in that state or territory. No state has less than one delegate and the largest state, New York, has as many as 53. The House of Delegates in 1953 numbered 394 members.

Matters come to the attention of the House of Delegates from reports of the standing committees of the Association (usually called Councils), from recommendations of the Trustees, from resolutions transmitted by state or local societies, and from resolutions proposed by individual members of the House. When a matter has come properly before the House of Delegates, it is referred to a Reference Committee which is similar to your own committees of Congress. Reference committees conduct open hearings just as you are conducting this one today. The time and place of the hearings are announced weeks in advance and any member of the Association, whether a delegate or not, is free either to submit a communication to the Committee or to appear before it in person to discuss his views with respect to any matter which has been referred to it. The Committees ordinarily meet in open session for an entire day, holding both morning and afternoon sessions. At the close of the hearing, and after all have been heard who so desire, the Committee, in executive session, considers the questions before it in the light of the information which has been presented.

It then files a formal written report containing its recommendation to the House of Delegates, and the matter is then taken up and considered by the entire membership of that body. The resulting decision becomes policy of the Association until revised, modified, or revoked by the House of Delegates.

This question of including self-employed dentists in the Old Age and Survivors' Insurance scheme has had the attention of the Association's House of Delegates five times. In 1948, in connection with the annual meeting of the Association, the Council on Legislation sponsored an open forum on Old Age and Survivors' Insurance, presenting Mr. Wilbur Cohen of the Federal Security Agency as a speaker to explain the provisions of the law, as it then existed, and the provisions of the bill then pending before Congress which proposed to include self-employed persons. Of the more than 5,000 dentists registered and in attendance at that meeting, about 100 appeared at the forum. After the forum, the informal sentiment of those present was favorable to including dentists in the O.A.S.I. system. The Council on Legislation, therefore, submitted to the House of Delegates a supplemental report recommending that the Association support the pending measure. This recommendation was approved by the House of Delegates.

The House of Delegates in 1949 reconsidered this matter and adopted, without a dissenting vote, the resolution which I quoted earlier.

In 1950 the subject was not before the House of Delegates specifically. The House, however, passed a resolution directing the Association's Council on Insurance to make a study of insurance matters of interest to dentists, including Old Age and Survivors' Insurance. As part of its study the Council sent a questionnaire to every seventh member on the active and life membership lists, or to about 9,300 dentists. In response to the question "Should Federal legislation be sought to include dentists under O.A.S.I.?", 51.7 per cent said no and 48.3 per cent said yes.

The 1951 House of Delegates had before it the results of this survey together with a resolution from the Massachusetts State Dental Society requesting the House to reverse the existing policy. More than 100 persons appeared before the Reference Committee and expressed their personal views. In its report, the Reference Committee stated that the views of those who appeared convinced the Committee that the membership was about equally divided; that there was considerable misunderstanding of the provisions of the law and it recommended, therefore, that the entire matter be postponed for one year during which period, the state and local societies could attempt to inform their members concerning the law.

During the ensuing year the Association prepared a kit of materials setting forth in considerable detail information about the whole subject, which kit was sent to each of the 53 constituent and 440 component societies. Most of these societies appointed their own special committees to study the question and to report to the membership. Many of the societies, in plenary session, heard the subject discussed pro and con by panels of experts including representatives of the Social Security Board and informed members of the Bar.

After all of this study and debate, the subject was again considered by a Reference Committee of the House of Delegates in 1952. At least eight hours were devoted to public hearings after which the Reference Committee, which apparently had taken the temperature of the Association through its hearings, once again recommended that the Association oppose inclusion of dentists and once more the House of Delegates reaffirmed its 1949 position.

In 1953 the Wisconsin State Dental Society sent a resolution to the House of Delegates requesting it to reconsider the present policy. The House by a vote of 312 to 64 rejected the Wisconsin proposal and adopted the following resolution instead:

"45-1953-H. *Resolved*, that the House of Delegates direct the Council on Legislation to present to the Congress of the United States the Association's policy of opposing the inclusion of members of the dental profession under the Old Age and Survivors' Insurance provisions of the Federal Social Security Act." *(Transactions, American Dental Association 1953, page 224)*

I have set out this history of the proposal within the Association so that you could see that American dentistry, through its formal organization, has studied this proposal for more than six years; has considered it openly, permitting all of the freedom of participation in the final decision on the part of members that citizens of the United States have with respect to the decisions of Congress but, nevertheless, has four times, in its most recent actions, rejected the idea of having self-employed dentists under Old Age and Survivors' Insurance.

Thus through action of their official body, the dentists of the United States have consistently indicated that they do not desire to be included within the O.A.S.I. scheme.

Except in unusual cases, dentists continue working throughout their lives. Since they cannot continue to work and simultaneously derive benefits from their contributions to this scheme, they prefer to be omitted from it so that they can invest their funds in retirement plans of their own choice from which they will receive, at least, the return of their investment.

The Association respectfully requests that H.R. 7199 be amended to exclude from the list of types of employment covered by Old Age and Survivors' Insurance, the practice of dentistry by the self-employed dentist.

Association testifies on proposed appropriations for VA outpatient dental services

Paul E. Jones of Farmville, N. C., a member of the Council on Legislation, presented the following testimony to the Appropriations Committee of the House of Representatives on February 11, 1954. Dr. Jones was accompanied by Mr. Francis J. Garvey, secretary of the Council. The Committee has since reported the bill containing the Veterans Administration appropriations to the House of Representatives. The bill does not grant the increase requested in the testimony but it does remove the earmarking feature so that additional funds can be obtained from the general medical funds if more money is needed.

Mr. Chairman and Gentlemen of the Committee:

I am Dr. Paul E. Jones of Farmville, N. C. I am here today as a member of the Council on Legislation of the American Dental Association to present the views of that organization with respect to those appropriations of the Veterans Administration which touch upon the dental care program of that agency. With me is Mr. Francis J. Garvey of Chicago, secretary of the Council on Legislation.

Last year when the Association appeared before your committee it recommended that the sums to be expended for dental use be specifically earmarked for that purpose. The Association wishes to commend you for adopting that suggestion. Enactment of the fiscal 1954 appropriation act, with the earmarking language, resulted, we believe, in a more efficient operation of the program. We are informed that money was available to the field offices when needed and in amounts adequate to provide the dental care authorized by law and regulation. The situation which existed in former years whereby money was made available to the Dental Service on a catch-as-catch-can basis, usually too late in the quarter to be properly expendable, appears to have been corrected. The American Dental Association requests that the funds to be provided for the program again be specifically earmarked in order to continue this salutary effect.

In the discussion with your committee last year we pointed out that the Association objected to including substantive legislation in the language of appropriation bills and we told you that we hoped to be able to present to the Congress in the near future a program for correcting this situation by amendment of the substantive law. Your committee nevertheless did include limiting language with respect to eligibility under the program and, after some adjustment by the Senate and in conference, this language became law in the text which appears on page 157 of the fiscal 1955 budget.

The effect of including this language was to eliminate a great many people from the program by removing from eligibility for outpatient dental services those persons who had dental disabilities of less than 10 per centum who did not apply for treatment for such dental disability within one year after discharge or by July 27, 1954. This limitation was not made to apply to adjunct outpatient dental services stemming from some other disability which had been service-incurred.

The effect of this limiting language was twofold: First, the potential dental case load for fiscal 1954 was increased in that the rider served notice that persons who would be af-

fected by the limiting language would be forever barred from the right to dental treatment unless they made application by July 27, 1954. Second, attention was focused on the nucleus of the problem, and constructive thinking with respect to it was done for the first time by many interested organizations which had previously ignored it. The rider did not of itself correct the fallacies in the program which were a source of concern to the American Dental Association. However, these were remedied to a large extent by two subsequent actions of the Veterans Administration: (1) the so-called "presumptive rule" was rescinded; and (2) the regulations of October 1, 1953, issued at a time when the House of Delegates of the American Dental Association was considering positive recommendations for substantive action on this program, eliminated what, in our testimony last year, we termed the "tooth entity theory." This means that under the existing regulations the Veterans Administration no longer assumes lifetime liability for the oral care of an individual who happened to have one tooth with a service-connected lesion.

The Association has noted that the proposed appropriation for dental outpatient care has been reduced from the 23 million dollars provided in fiscal year 1954 to $5,810,000 for fiscal year 1955. The Association has further noted that the President, in his budget message, has indicated that this lower appropriation is based on a recommendation that the limiting language of the 1954 appropriation rider be continued in fiscal 1955. Although thoroughly in accord with the purposes sought to be accomplished both by the limiting legislative language and by the two administrative regulations previously mentioned, the Association is surprised by the low estimate for the forthcoming fiscal year.

This estimate of needed funds for the hometown phase of the dental program appears to be predicated on the estimated number of examinations to be made and treatments to be given during fiscal year 1955. The figures shown on page 158 of the 1955 budget indicates that only 86,000 dental examinations will be made during the year. This is only about one quarter of the number which had been estimated for 1954. It is difficult to comprehend that the present regulations could have had such an immediate and radical effect considering the continuing creation of new veterans by the demobilization process.

Similarly, the budget estimates that there will be a total of only 148,000 treatments in fiscal 1955 as against 256,000 estimated for fiscal 1954. The Association understands that as of this time there is a backlog of some 200,000 cases awaiting treatment. Assuming that 60,000 new treatment cases will result from the 86,000 examinations to be made in fiscal 1955, we find that it will be necessary to treat 260,000 cases between now and July 1, 1955. This is roughly comparable to the actual case load during fiscal 1953 when 260,409 cases were treated (1955 budget, p. 158). However, during that period 200,000 of the cases were treated by private dentists and only 60,000 in VA clinics. It is probable that this estimate is low because many additional treatments will be authorized each month during the balance of fiscal 1954.

Assuming, however, that the total treatment load for the next 17 months will be 260,000, and assuming that seven-twelfths of the fiscal 1954 budget has already been expended, the amount remaining for dental care would be about 9.5 million dollars. When the amount proposed to be appropriated for fiscal 1955 is added to this, we find that there will be available during the next 17 months $15,300,000 for outpatient dental care for an estimated 260,000 patients. This case load is roughly equivalent to the case load of fiscal year 1953, but during fiscal 1953, 200,000 treatment cases were handled outside of VA facilities and only 60,000 in such facilities. The actual cost of the 200,000 cases was $25,233,656 (1955 budget, p. 157). It is now proposed to handle the equivalent case load for 10 million dollars less, and two thirds of the total amount available must be expended within the next five months.

Since the cost of work done in VA facilities is not included in the appropriation for outpatient treatment, it is apparent that any saving in budgeted expenditure for two patient loads of comparable size can result only from increasing the amount of work to be handled in VA facilities while simultaneously decreasing the amount delegated to private dentists. If the reduction of 17.2 million dollars, from 23 million dollars to 5.8 million dollars, for this item is realistic, then the VA facilities must be able to absorb a much greater share of the total patient load than they have previously. Let us examine what is proposed to be done in this respect in the light of past estimates of performance versus reported completed performance as shown by the annual budgets (see tabulation).

The tabulation indicates that the estimated ability to perform does not square with actual performance. It is only fair to note, however, that during this period the VA facilities were handling more than 200,000 examinations per year, whereas this year the VA anticipates only 75,000 examinations in its own clinics. Undoubtedly, this decrease in examination work load will increase the potential for treatment work load. It is impossible to ignore the fact,

however, that demands are still made on the VA dentists to expend time on the reviewing of claims for dental treatment, a chore which normally is performed by dentists in the employ of the Claims Department. Personnel reductions in the latter department in the past few years have thrown an increasing burden on dentists in the Department of Medicine and Surgery and have decreased the amount of time which they have available for chair-side work.

Last year it was indicated in our discussion with the committee that your then intention was to appropriate about 15 million dollars for the program, based on the VA justification. After you had heard the testimony you increased this to 23 million dollars. In testifying before your committee last year Admiral Boone, in a colloquy with Mr. Yates, indicated that $52,427,000 would be needed for outpatient dental needs during fiscal 1954 (Hearings, page 669). In reviewing this for testimony before the Senate, the Association estimated, using Veterans Administration cost figures for treatment, and considering the existing backlog plus anticipated new cases, that the real cost of the program in fiscal year 1954, if given on the basis then authorized by law and regulation, would really have been about 79.5 million dollars. This potential cost has, of course, been reduced considerably by the regulations and the rider attached to the appropriation. The fact remains, however, that it is unrealistic in the light of past performance to suppose that the Veterans Administration can accomplish 98,000 treatments in its own clinics during the forthcoming fiscal year and of necessity many of these cases will either be held as a backlog or will be referred to private dentists within the limits of funds provided.

The Association is interested in having this program continued on the present basis. However, if the backlog mounts, the pressure from untreated individuals will tend to cause new encroachments on the existing setup and possibly a return to former expensive unrealistic conditions for dental treatment of veterans. The Congress and the Veterans Administration have courageously met the problem which has been presented by reducing potential eligibility for care with VA funds. The Association would recommend that this same courageous outlook be taken in the current

FY	Intramural treatments estimated	Intramural treatments completed	Source
1951	90,000		1952 budget, p. 129
		76,036	1953 budget, p. 155
1952	83,000		1952 budget, p. 129
		60,589	1954 budget, p. 142
1953	76,000		1954 budget, p. 142
		61,745	1955 budget, p. 158
1954	76,000		1954 budget, p. 142
		49,000 (Est.)	1955 budget, p. 158
1955	98,000	?	1955 budget, p. 158

appropriation bill, and that a sufficient amount be provided so that the vast bulk of the existing backlog, plus a large proportion of new applications, can be examined and treated during fiscal year 1955. Thereafter it should be possible to realize the budget savings sought to be accomplished at this time.

We have stated that the existing backlog of approved applications for treatment is about 200,000. It is estimated that a total of 86,000 additional examinations will be made during 1955. Assuming that 60,000 of these will be approved for treatment, it means that a quarter of a million dental treatments must be accomplished within the next 18 months. If one third of these can be accomplished during the balance of the present fiscal year, about 165,000 will remain to be accomplished during fiscal year 1955. Assuming that the Veterans Administration can actually produce 65,000 of these treatments within its own facilities, there will remain 100,000 to be done by home-town dentists. Using the figure of $104.52 per average treatment mentioned by Admiral Boone on page 669 of last year's hearings, approximately $10,452,000 will be required for the outpatient treatment program. Adding to this the 12,000 examinations which the VA anticipates will be done by home-town dentists at an expense of $14.33 will cost another $175,000; a reasonable figure for this program will be $10,627,000 for fiscal 1955.

The American Dental Association respectfully requests that your committee give serious consideration to providing this sum which is more than a 50 per cent reduction from last year's appropriation, but which in the light of past history appears to represent realistically the proper cost of this program during fiscal year 1955.

Cases and Comments

OPEN REDUCTION OF FRACTURE OF MANDIBULAR CONDYLE

By C. W. Newman, D.D.S., and C. F. Thompson,† M.D., Indianapolis

This case is reported in order to show one result that was obtained through open reduction of a condylar fracture of the mandible.

The patient, a white man, aged 26, was admitted to the hospital March 16, 1947, after an automobile accident. On admission he was semicomatose. There was a fracture of the mandible at the symphysis and a fracture in the region of the left condyle with a noticeable deviation of the chin to the left. The mouth was in a fairly clean condition with most of the teeth present.

Roentgenographic examination showed the fracture at the symphysis to be compound and comminuted, with considerable displacement. The left condylar process was fractured from the ascending ramus with noticeable displacement (Fig. 1). There also was a skull fracture.

Treatment • Because of the skull fracture, it was not feasible to operate on the patient until April 7. At that time a Jelenko arch bar was placed on the upper teeth and a plain arch bar was wired loosely to the lower teeth. The symphysis fracture was reduced, the wires tightened and the jaws further immobilized with intermaxillary elastics (Fig. 2). On April 14 there was still considerable deviation of the chin to the left and the condylar fragment was in a poor position, so the decision was made to do an open reduction of the condylar fracture. An incision was made just below the zygomatic arch and the proximal and distal fragments were exposed. One hole was drilled in each fragment about 1 cm. from the fracture edge. The fracture was reduced and immobilized with an interosseous stainless steel .020 inch ligature. Closure of the periosteum, muscle and superficial fascia was done with no. 000 plain catgut and the skin

*Chief, dental service, VA Hospital.
†Orthopedic consultant, VA Hospital.

Fig. 1 • Above: Fracture at the symphysis and of the left condylar process with displacement

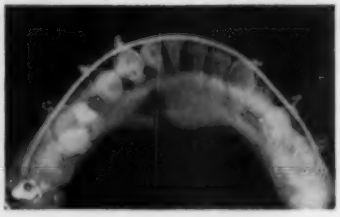

Fig. 2 • Left: Jaws immobilized with intermaxillary elastics

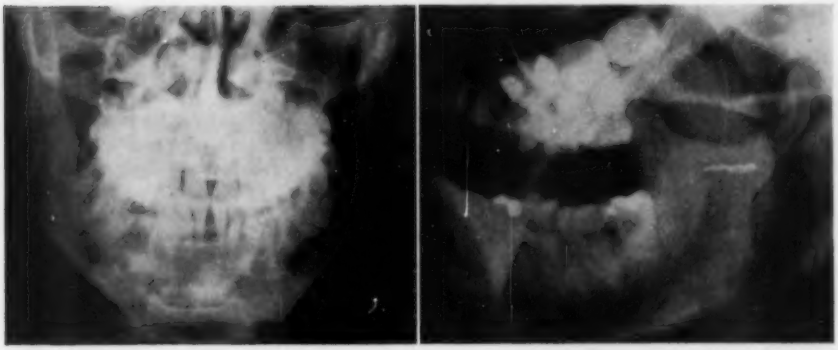

Fig. 3 • Above: Roentgenograms taken September 29, 1947 showing bony union of condylar fracture

Fig. 4 • Right: Little evidence of fracture at symphysis

was closed with no. 0000 black silk. Ether, administered by endotracheal intubation, was used in both operations.

Postoperative roentgenograms showed all fragments in good position. Penicillin therapy was used from admission until April 22. The elastics were kept on until June 2 at which time clinical examination indicated there was a firm union at both fracture sites. Roentgenograms showed some bony union at that time. The occlusion was normal and when the patient was discharged July 4 he was able to open his mouth to normal limits.

On September 29, 1947, roentgenograms of the mandible showed bony union of the left condylar fracture and there was little evidence of the fracture at the symphysis (Fig. 3, 4).

Remarks • Full function was restored in this case. Although it is not the policy of the authors to do many open reductions of condylar fractures, the apparent need for adequate reduction in this case and the result obtained, as evidenced by the final roentgenograms, seem to justify the open reduction operation.

Good Company • Consider what you have in the smallest chosen library. A company of the wisest and wittiest men that could be picked out of all civil countries, in a thousand years, have set in best order the results of their learning and wisdom. The men themselves were hid and inaccessible, solitary, impatient of interruption, fenced by etiquette; but the thought which they did not uncover to their bosom friend is here written out in transparent words to us, the strangers of another age. *Emerson.*

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Editorials

Great expectations from dentifrices, and words that mean too much

The scientific terminology of dentistry is currently making a strong appeal to the interest of the profession. Witness several recent projects. The Academy of Denture Prosthesis, at a workshop in April, examined nearly one thousand words which its nomenclature committee considered necessary to the professional vocabulary of the prosthetic dentist. The American Dental Association through its Bureau of Library and Indexing Service will sponsor a conference next September on some of the perennial problems of nomenclature; and the American Medical Association has a subcommittee revising and expanding the dental section of *Standard Nomenclature of Diseases and Operations* for its next edition. Fédération Dentaire Internationale also has a committee, on which the Association is represented, that is studying the nomenclature of all branches of dentistry.

There are two opposed schools of thought as to the benefits to be derived from a critical study of nomenclature. There are those who consider the very foundations of science to rest upon an exact and adequate terminology, and there are those who believe that it makes little or no difference what words are employed as long as they have arisen naturally, without the meddling of etymologists and reformers. The truth, as usual, probably lies somewhere between the extremes.

If it be accepted, in keeping with the views of modern semanticists, that all language is functional, and even that some of the proprieties may be sacrificed to the utility of the word, then intelligibility becomes the overshadowing criterion of good usage. This objective implies, not only that words should adequately represent the concepts

for which they stand, but that they should be free from implications which distract them from their intended meaning.

An example drawn from the immediate situation in dentistry is the recently coined term *therapeutic dentifrice,* to designate the tooth pastes and mouthwashes intended as preventives of dental disease, especially caries. The term has been objected to on the grounds that it says more than it means and tends to give the public and perhaps even the dentist the impression that the product will accomplish even more than its (as yet unsubstantiated) objective. The so-called therapeutic dentifrice offers neither a palliative, a restorative, an arrestive nor a curative treatment. Informed persons know that a carious cavity can no more be cured than an amputated leg, and even advocates of the therapeutic dentifrice do not contend that it can prevent the progress of a carious lesion once started. This point is particularly important, since the results of preventive measures are often loosely referred to as "reducing caries by sixty per cent." Nor can the therapeutic dentifrice be called a *prophylactic tooth paste,* without self-contradiction, for unfortunately the original and general meaning of prophylaxis has become narrowed in dentistry to a specific cleansing operation performed only by the dentist or auxiliary personnel. *Medicated dentifrice* is probably the most satisfactory designation, since it sufficiently distinguishes the character of the product but is reticent about the effectiveness of its specific content.

Cosmetic dentifrice, the term complementary to *therapeutic dentifrice,* used for general dentifrices of the standard type, is equally objectionable. It implies a wrong emphasis, though one often stressed in advertising. The main aims of dentistry are directed at health, not appearance. Consequently, the terms *cleansing dentifrice* and *detergent dentifrice,* both of which are reticent and call attention to the chief purpose of a dentifrice, are more appropriate.

These examples, drawn from the midst of dentistry's current activities, demonstrate the importance of giving the utmost consideration to every new dental term even though it is to be used to designate the simplest of things.

Dentistry and the chronically ill

Relatively few patients and probably not overly many dentists would list dental disorders among the chronic diseases. Yet many dental disturbances fall logically into that category and are beginning to be recognized as such by an increasing number of leaders concerned with the care of the chronically ill. Dentistry shares this concern, and its leaders are endeavoring to cooperate with all those who are interested in human rehabilitation and to secure their assistance.

Dentistry's attitude in this regard was presented during the recent National Conference on Care of the Long-Term Patient held in Chicago under the auspices of the Commission on Chronic Illness. There more than four hundred representatives of thirty-seven national health organizations considered the multiple problems involved in the provision of health care for the chronically ill. David W. Brock, chairman of the Council on Dental Health of the Association, in an exhaustive report

prepared by that Council, pointed out (1) that many major chronic illnesses directly affect the health of the mouth and (2) that certain dental disturbances definitely are chronic in character even if not generally so considered. The Council's statement, entitled "The Role of Dentistry in Chronic Illness," on which Dr. Brock based his report, is scheduled for publication in the June issue of THE JOURNAL. It contains the following five salient points to which every member of every state Council on Dental Health and others interested in community welfare will wish to give the utmost consideration:

1. A concept frequently overlooked is that many dental diseases are or may become chronic. Among these conditions are dental caries, gingivitis, advanced periodontal disease, and malocclusion.

2. Many of the major chronic illnesses have direct implications in the field of dentistry. Among these illnesses are diabetes mellitus, cancer, epilepsy, cerebral palsy, cardiovascular diseases, arthritis, cleft palate, tuberculosis and nutritional disorders.

3. A serious problem exists in getting dental care to the bedfast patient, and dental societies and community groups can aid greatly in the development of programs to meet this need.

4. Community dental health programs that lead to the prevention and control of dental diseases lead also to the prevention and alleviation of chronic illness and disability.

5. Good dental care is an important factor in contributing to the over-all health and rehabilitation of persons who are chronically ill.

Although it is recognized that many dental societies are already heavily burdened with activities and responsibilities designed for community improvement, here is one responsibility that cannot be brushed off. No dental society can afford to underrate dentistry's position in a program for the chronically ill. In each community where such a program is in effect or is being developed, the dental society might well volunteer, if it has not been invited, to aid in amplifying the project—another civic responsibility that must be shouldered if dentistry is to maintain and advance its status as a health profession.

Finances for dental research: a sick industry

During the past quarter of a century it has become more and more common to criticize the national government for excessive spending, underwriting of unrealistic projects, waste and disregard for the taxpayer's dollars. Whereas formerly a million dollar appropriation was spoken of with a certain degree of respect and awe, billions now roll off the tongue with the utmost ease and facility. Even the most parsimoniously-minded of critics, however, cannot honestly condemn the federal agencies for lush and loose expenditures in the field of dental health.

In so far as the nation's Health, Education and Welfare authorities are concerned, America's dental health problems apparently are so inconsequential as to require

little social concern and less financial support from the one federal agency charged with the responsibility of improving the nation's health. This perennial disinterest in the dental health status of the country shown by the United States Department of Health, Education and Welfare and its predecessor, the defunct Federal Security Agency, is manifest in the recently issued Public Health Service Publication Number 339. This report lists the research grants and fellowships awarded by the Public Health Service for fiscal 1953. The following table reproduced from that publication is not overflattering to dentistry as it shows that the National Institute of Dental Research's grants were but 1.1 per cent of the total Public Health Research Grants approved in 1953 and but 2.5 per cent of the Public Health Service Fellowship awards approved for that year:

Summary of grants and awards—Public Health Service research grants and fellowship awards approved for payment from fiscal year 1953 funds

Institute	Research grants		Research fellowships	
	Number of grants	Amount approved for payment	Number of awards	Amount approved for payment
Total	2,084	$20,936,410	543	$1,943,397
Division of Research Grants[1]	528	4,309,315	61	196,328
National Institute of Arthritis and Metabolic Diseases	143	1,434,945	43	144,159
National Institute of Neurological Diseases and Blindness	121	1,038,835	42	143,240
National Cancer Institute	481	5,066,152	163	595,747
National Institute of Dental Research	30	229,607	11	48,173
National Microbiological Institute	233	2,085,345	45	143,614
National Heart Institute	438	5,279,086	115	435,400
National Institute of Mental Health	110	1,493,125	63	236,736

[1]Grants in support of research that does not fall specifically within the scope of interest of any one of the Institutes are administered by the Division of Research Grants. Recommendations are made directly to the National Advisory Health Council.

Prospects for increased federal support of dental research are none too bright. Notwithstanding the fact that the President of the United States in his annual message this year complimented dentists as being part of the nation's health team, and although he mentioned the need for more dental research the total dental budget of the USPHS remains practically unchanged. The figures cited are merely symptomatic as they indicate the disproportionate amounts allocated for research in the various health fields. Similar disparities are discernible in the budgets of the other federal services. In the case of the philanthropic foundations, the situation is even worse.

It becomes increasingly clear that American dentistry has a real job cut out for itself—the job of changing the attitudes or adjusting the biases of certain key people on appropriation committees and in administrative positions regarding the full significance of dental disease and the importance of dental health. Certainly the most ardent critic could find little to condemn in an expenditure of even a million dollar research grant program if it will materially reduce the nation's dental bill which now approximates one and a quarter billion dollars a year. The undernourished condition of dental research is a matter that should arouse the concern of every American dentist.

Three weeks in Russia: A report on Russian dental education

In the fall of 1953 a delegation of 19 young people from the National Union of French Students visited a number of major cities in the USSR. A report of that trip (excerpts of which follow) was written by Guy Penne for the November and December 1953 issues of *La Voix Dentaire*, publication of the General Association of Students of Dental Surgery and the Dental Office of the National Union of French Students. "The aim of the article," wrote Mr. Penne, "is not to judge the advantages or disadvantages which the government of the USSR creates for students or citizens. The aim of the delegation was to see and to report."

Conscious of the weakness resulting from illiteracy, Russia is attempting to improve the educational level of its people. In 1914 there were 8 million pupils in the primary schools. By 1938 there were 32 million. In 1933 there were but 112,000 enrolled in Russian universities. By 1953 the number had risen to 1,500,000. Today there are 33 universities in the USSR, at least one in each Republic.

The facilities offered students are quite different in the various universities. The University of Moscow, Russia's newest and most modern university, provides its students with comforts that far surpass those enjoyed in other schools. Some schools, for instance, crowd five and six beds in one room and provide only one bureau for the room's occupants. At the Institute of Mines in Dniepopetrovsk, there was one washstand for more than 50 students.

GOVERNMENT AID

About 80 per cent of Soviet students receive scholarships, which are awarded according to marks received on examinations. Those who earn grades of "good" or "perfect" have the right to a scholarship. Those who get "bad" do not. Grades run from "1" to "5."

The size of the scholarship depends on grades and the year of training. During the first three years a student receives from 290 to 362 rubles per month. (At the official exchange rate this would equal $72 to $90.) During the last two years the student can receive a maximum of 450 rubles.

The system of student restaurants, which in France is a form of indirect state aid, is not as widespread in Russia and as for student housing, in the USSR as in France, the needs far outstrip the possibility of satisfying them. Where university restaurants do exist, students can get a meal for three or four rubles. The government provides students with free medical care.

UNIVERSITY OF MOSCOW

The University of Moscow has 12 faculties classified in two groups: the natural sciences (such as physics and chemistry) and the sciences of man (such as political science and journalism).

There are 18,000 students enrolled; among these are 4,000 taking correspondence courses. Including the students of the separate Institutes such as the Institute of Dentistry, the number of Moscow students exceeds the 50,000 students of Paris.

In these schools, as well as in the University, young women are about 51 per cent of the total. It is not unusual to see women students preparing for the Mine examinations or wanting to become engineers in a factory. The idea of the division of labor between men and women is quite different from the idea held in France. Students in the USSR were surprised to learn that French women students preferred to study law or literature instead of the technical specialties.

The length of study is five years for all disciplines.

THE TEACHING OF DENTISTRY

The Medical-Dental Institute, which was founded in 1917, was transformed in 1935 to an autonomous school. It has at present 1,000 students.

Students enter the Institute or the faculty of their choice without examination if they have received a medal in secondary school. Medals are awarded to students who receive for their five subjects no less than four grades of "5" and one of "4." At the end of secondary school 40 per cent of the students have medals. The others take an examination before a jury composed of professors of each branch of higher studies.

All students specialize from their first year

in the Institute. The first and second year of study cover anatomy and dissection, physiology, physics, chemistry, foreign language, Latin, microbiology and 220 hours of Marxism-Leninism. In the third year the courses cover clinical work, general pathology, hygiene and operative dentistry on dummies. In the fourth and fifth year, instruction is by operation on clinical patients. Courses are taken in therapeutics, maxillofacial dental surgery and orthopedics. In the fifth year courses are completed in clinical pediatrics and ophthalmology. The Institute has at its disposal 50 beds and two operating rooms.

Students take six hours of classes daily. Two thirds of the program is spent on dental surgery. During the fourth year students spend two months during the summer in the dental service of a polyclinic. Those in the fifth year take a supplemental course at a clinic for two weeks during the winter. After their practical experience students turn in a thesis in which they describe an interesting case which they have treated.

Examinations are given each semester and are oral.

In addition to the program just described, there is a "technical-medical" section which trains only mechanical dentists. These prosthetists are paid according to prices set by the government. Salary is based on the number of dentures made.

AFTER GRADUATION

The graduates of the Institute can practice other specialties besides dental surgery and do replace physicians in centers where there are not enough physicians. Many Institute graduates during the war had to perform operations in general surgery.

The Minister of Public Health, three months before graduation, sends a plan of the needs of each Republic and an order of distribution for cities and country areas. Students choose from the list according to their grouping among the available posts. There is no such thing as a private dentist; all are connected with a polyclinic or with a hospital.

The base salary for five and a half hours of work a day during the first five years of professional practice is 800 rubles a month (about $200). The salary can be increased 200 rubles afterwards. The salary is the same for physicians, pediatricians, pharmacists—in short, for all the medical and auxiliary medical professions.

TEACHING AND EQUIPMENT

The best students can remain "aspirants" for three years after receiving their diplomas. At the Institute of Moscow there are at the moment 80 aspirants. These men are preparing their first thesis and will become "candidates" so that they may teach. After their second thesis, after some years of work and according to the needs of the "Plan," the "doctors" can become "professors."

In 1935 some S. S. White material including 80 chairs was bought to equip three main rooms in the Institute and several laboratories: bacteriology, prosthetics, lecture rooms.

In one room was installed a 1925 x-ray machine capable of serving for general roentgenography and a machine for dental roentgenography has been recently purchased. There are a few dental x-ray machines in the polyclinics, hospitals and institutions.

CONCLUSIONS

It is very difficult to judge a nation in four weeks. Our delegation found in the Soviet students a real enthusiasm for the "conquests" of the regime—an enthusiasm which seemed to us not always justified.

We hope that the atmosphere of international tension will subside and that the government will allow 20 Soviet students to come to France in accordance with the invitation which we gave them in the name of the National Union of Students of France.

Washington News Letter

The 1954 session of Congress has passed the halfway mark with none of the national health bills recommended by President Eisenhower yet enacted into law. A few months ago, Administration hopes were high that Congress would approve federal reinsurance of voluntary health plans, expansion of the Hill-Burton hospital construction law, broadened health care benefits for servicemen's dependents and the provision of similar benefits for federal employees on a share-the-cost basis.

At this late stage, however, and with members of House and Senate striving for a July adjournment to permit them to start their reelection campaigns, the chances of putting over the Eisenhower program have all but disappeared. Except for the Hill-Burton amendment, which has passed the House and now awaits Senate action, it is very unlikely that there will be any Congressional implementation of the President's special health message which he transmitted to the Capitol in January.

In late April or the first part of May, the House Commerce Committee is scheduled to complete public hearings on reinsurance. On this proposal, testimony has been preponderantly in favor of replacing this plan with something more likely to produce results or else has been in favor of taking no action pending further study.

DENTAL ASSOCIATION TESTIMONY

On April 14 the American Dental Association's position on reinsurance and other pending bills was presented to the health subcommittee of the Senate Labor and Public Welfare Committee. The witness was Floyd W. Pillars of Des Moines, a member of the Council on Legislation. He was accompanied by Francis J. Garvey, Council secretary.

Certain changes in the Hill-Burton amendment bill were suggested by Dr. Pillars. He recommended that action be withheld on the reinsurance plan to permit additional study of its provisions. Unqualified approval was given the Administration-supported bill to revise the formula for Public Health Service grants-in-aid to the states.

In its present form, said Dr. Pillars, the Hill-Burton amendment bill takes no recognition of dental services that might be performed in the diagnostic and treatment centers which would be erected with federal financial aid. This can be corrected by a slight change in language that would make it clear that these centers would be dedicated to dental as well as medical services, he said.

Dr. Pillars also testified on the proposed federal reinsurance program which is designed to promote membership in voluntary coverage plans. He praised the bill's objectives but questioned whether it could accomplish much. "This program," he said, "attacks the problem only in the area of financing and to an extremely limited extent in that area."

In support of the bill for revision of the formula for public health grants, the witness observed that the U.S. Public Health Service makes categorized grants for cancer, tuberculosis and other disease but none for dental health programs. State assistance in this field has come through the Children's Bureau, he explained.

"In view of the prevalence of dental disorders and the obvious need for expanded state programs in the field of dental public health," Dr. Pillars said, "the Association believes that enactment of the new formula and elimination of the categorical grants would stimulate sound programs in fields of health which are important to the welfare and comfort of the individual but which are neither so dramatic nor appealing as the killer diseases like cancer and heart ailments or those which cause the removal of the individual from society such as tuberculosis and mental disorders."

VETERANS ADMINISTRATION

Late in April, the Senate Appropriations Committee heard testimony from the American Dental Association on the outpatient dental care activities of the Veterans Administration. An unusual problem has arisen as a result of the recent House decision to abolish the requirement that applicants for dental treatment, in order to qualify, must present proof that the oral condition existed at the time of their discharge from military service.

Although the House, in passing the appropriations bill, eliminated the above restriction, it granted no increase in funds for the dental program. The VA's position is that the appropriation must be substantially increased to accommodate the prospective rise in applications or else there will be no alternative but to create long waiting lists.

Association Affairs

INSURANCE ENROLLMENT PERIOD EXTENDED TO MAY 31

Dentists now have until May 31 to apply for coverage under the Association's Accident and Health Insurance program, it has been announced. The enrollment period was extended thirty days because of the large number of dental societies holding meetings in May. Dr. Paul Zillmann, insurance trustee, pointed out that the May 31 date would permit additional states to meet the quotas which, if reached, would allow coverage of impaired risks.

Under the insurance plan impaired risks in a given state will be covered provided 50 per cent of those eligible apply for insurance. Several states are close to their quotas. As of April 14 Virginia needed only two additional applications. Applications needed in other states included North Dakota, 8; Montana, 9; Delaware, 11; Rhode Island, 15; Vermont, 19, and South Dakota, 32. Wyoming reached its quota during April.

The National Casualty Company's plan has been in effect for some time in New York, New Jersey, California, Utah and Nevada.

DENTAL RADIOGRAPHY FILM READY FOR DISTRIBUTION

The new motion picture *Hazards of Dental Radiography,* produced by the American Dental Association's Research Fellowship at the National Bureau of Standards, will soon be ready for distribution, it has been announced.

The film was produced following an investigation conducted by the Association's Research Fellowship into the extent and types of injury suffered by dentists through insufficient protection against dangers encountered in the use of the roentgen ray. It is hoped that the showing of the film will alert dentists to these subtle dangers and will help to lessen these injuries.

Hazards of Dental Radiography may be obtained from the Fellowship at the National Bureau of Standards in Washington or from the Central Office of the Association about May 15.

OASI FOR DENTISTS OPPOSED, OTHER A.D.A. VIEWS TOLD

Association views on pending government legislation were presented to House and Senate Committees in Washington during April. Testifying were J. Claude Earnest, Floyd W. Pillars and Paul E. Jones of the Council on Legislation and Rudolph H. Friedrich of the Council on Federal Dental Services.

A "realistic limitation" on the amount of dental care provided to war veterans by the Veterans Administration was urged by Dr. Friedrich in his testimony April 8 before a subcommittee of the medical task force of the Hoover Commission. The A.D.A., he said, favors enactment of legislation to restrict VA treatment to defects which can be proved to be service-connected.

Dr. Jones urged the Senate Appropriations Committee to retain the provision of last year's appropriation bill which earmarked sums specifically for the VA's outpatient dental services.

Dr. Earnest told the House Ways and Means Committee that a questionnaire

sent to every seventh member on the active and life membership list of the Association showed that 51.7 per cent of the dentists were opposed to being covered by OASI. Dentists, Dr. Earnest said, "prefer to . . . invest their funds in retirement plans of their own choice from which they will receive, at least, the return of their investment."

Dr. Pillars appeared before the Senate Labor and Public Welfare Committee to support the Public Health Grant-in-Aid Amendments which he stated would stimulate dental programs. The present law provides that funds must be spent in five specified health fields and grants have not been available specifically for dental health programs. Under the amendment the five categorical grants would be eliminated and a single-grant fund would be substituted. Funds available under the single grant could be used by the state for any programs in the health care field approved by the Surgeon General for which the state might have need.

Dr. Pillars also suggested changes in the wording of the "Little Hill-Burton Bill." The bill makes funds available to the states for the building of diagnostic and treatment centers. The present wording, he said, tends to eliminate the possibility of establishing dental facilities under this piece of legislation.

The Committee was also told that, in the opinion of the Association, action should be delayed on the federal reinsurance program under which the federal government would pay the insurance companies three fourths of abnormal losses on reinsured health policies.

DELEGATES TO MEET IN MIAMI MUNICIPAL AUDITORIUM

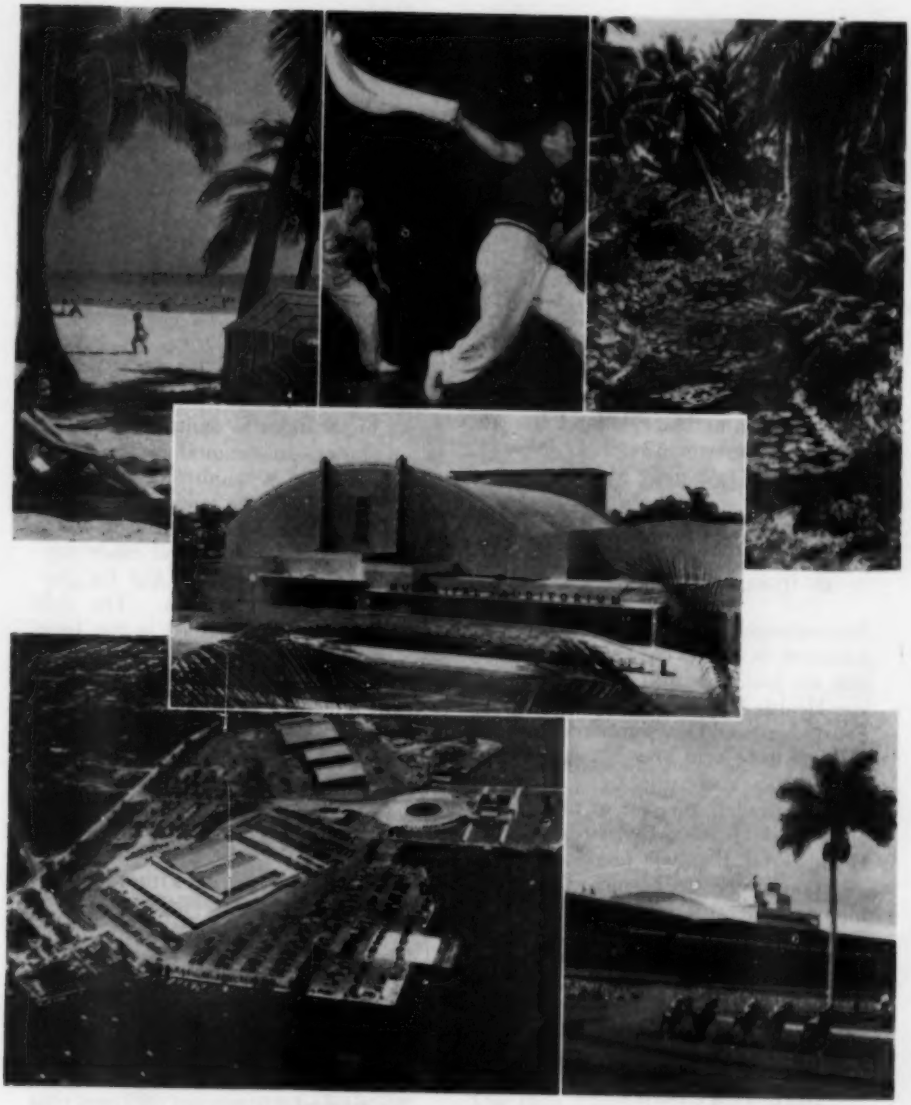
For the first time, the Association House of Delegates will not hold its meetings in a hotel. During the 95th annual session November 8-11 it will meet in the Municipal Auditorium of Miami, Fla.

The Municipal Auditorium is situated in Bay Front Park. Association officers, trustees and delegates and state society officers will be housed in the McAllister and Columbus hotels. Those taking part in the scientific program will be housed in the Biscayne Terrace and the Everglades. These four official hotels are across Biscayne Boulevard from the Municipal Auditorium.

The scientific exhibit and the entire scientific session will be in the Dinner Key Auditorium in south Miami. There are no hotels situated near this auditorium

Other organizations: headquarters and dates of 1954 sessions

Academy of Oral Rehabilitation of Handicapped Persons	November 5	Shore Club
American Academy of Gold Foil Operators	November 6	Atlantis
American Academy of Periodontology	November 4-6	Empress
American Association of Dental Examiners	November 5-6	Biscayne Terrace
American Association of Public Health Dentists	November 7	Everglades
American College of Dentists	November 7	McAllister
American Dental Assistants Association	November 7-11	Roney Plaza
American Dental Hygienists' Association	November 6-11	Alcazar
American Denture Society	November 5-6	di Lido
American Society of Dentistry for Children	November 5-7	Shore Club
International College of Dentists	November 7	Cadillac
National Association of Seventh Day Adventist Dentists	November 5-7	Monte Carlo
Association of American Women Dentists	November 7-8	Empress
American Academy of Oral Roentgenology	November 6	Alcazar
Alpha Omega	November 7-8	Delano
Delta Sigma Delta	November 5-8	San Souci
Psi Omega	November 8	Atlantis
Xi Psi Phi	November 8	San Marino
American Association of Dental Editors	November 6	McAllister
American Society of Oral Surgeons	November 3-6	Hollywood Beach, Hollywood



The House of Delegates will meet in the Miami Muncipal Auditorium (center) during the Association's 95th annual session November 8-11. Lower left is the Dinner Key Exposition Building, which will house the scientific exhibit. Miami offers a variety of scenery, from white sand beaches (above left) to the lush tropical growth of the Bayfront Park rock garden (above right). The sports enthusiast may visit the Gulfstream Race Course (below right), watch the Spanish game of Jai-Alai, which is played nowhere else in the nation (above center), or swim from Miami Beach's eight miles of palm shaded sand.

The Association Housing Bureau opened April 1 at 320 N.E. Fifth Street in Miami. Application for housing may be made on the coupon to be found on page A-29 of The Journal and should be made as soon as possible, it has been announced.

but special bus service from Miami Beach hotels to downtown Miami and to the Dinner Key Auditorium has been arranged.

Most of the organizations meeting prior to the annual session will hold their meetings in Miami Beach.

REQUESTS TIME TO TESTIFY ON ANTIFLUORIDATION BILL

The Association has requested time to testify before the House Committee on Interstate and Foreign Commerce against H.R. 2341, an antifluoridation bill introduced by Congressman Wier (D., Minn.). Hearings will take place May 25-27.

A.D.A. TO PARTICIPATE IN HEALTH CONFERENCE

Approximately 40 national organizations interested in aspects of health and education are joining with the American College Health Association in sponsoring the Fourth National Conference on Health in Colleges to be held May 5-8 at the Hotel Statler, New York.

Perry Sandell, director of the Council on Dental Health's Division of Dental Health Education, will represent the Association at the Conference. Of specific interest to dentists will be the panel discussions on health instruction in colleges and health services of colleges, as these will deal in part with dental care.

DENTISTS WARNED ON DIRECTORY DEADLINE

Dentists who wish to be listed as Association members in the 1955 directory are urged to pay their dues as quickly as possible. The deadline for listing in the directory is July 1. Dentists who send in their dues after July 1 will not be listed as members.

CHRONIC ILLNESS COMMISSION GETS DENTISTRY STATEMENT

A statement on the role of dentistry in chronic illness prepared by the Council on Dental Health was given to the Commission on Chronic Illness to aid in its study on the care of the long-term patient. David W. Brock, Robert A. Downs and W. Philip Phair represented the dental profession at the Commission's national conference held in Chicago March 18-20.

The statement prepared by the Council on Dental Health pointed out that "many of the major chronic illnesses have direct implications in dental health and manifestations in the oral cavity." The statement listed a number of these diseases, pointed out the inadequate dental care provided long-term patients in many hospitals and institutions and made suggestions for improved care and for prevention of chronic illness. (The full statement will be published in the June issue of THE JOURNAL.)

A committee of the Council on Dental Health is preparing a guide for constituent societies which will outline principles and make specific suggestions for dental programs for the chronically ill which could be developed by the societies.

RELIEF FUND CONTRIBUTIONS REACH ALL-TIME HIGH

Total contributions to the 1953-54 Association Relief Fund reached $103,791 April 12, an all time high, as 34 societies exceeded their quotas. The new total surpassed by $320 the previous record established in last year's drive.

Societies which reached 200 per cent or more of their quota as of April 12 were Alabama, Alaska, Idaho and Tennessee. The larger societies, with quotas over $900 went over the top with contributions amounting to 101.5 per cent of quota. Societies with quotas of $900 or less contributed 114 per cent of quota.

Attending the meeting of the Association Board of Trustees held at the Central Office March 18-20 were (standing l. to r.): John J. Hollister, business manager; A. F. Schopper, sixth district; Louis M. Cruttenden, assistant secretary; Harold Hillenbrand, secretary; C. Willard Camalier, assistant secretary; Edward R. White, fourth district; Charles H. Patton, third district; Howard B. Higgins, fifth district; Bernard C. Kingsbury, thirteenth district; Lewis W. Thom, tenth district; Charles I. Taggart, first district; Paul H. Jeserich, ninth district; Percy T. Phillips, second district; William R. Alstadt, twelfth district; Charles S. Renouard, eleventh district; Earl G. Jones, seventh district; (seated l. to r.): Lon W. Morrey, editor; L. H. Jacob, eighth district; H. B. Washburn, treasurer; Hollis O. Warrick, third vice-president; Daniel F. Lynch, president-elect; Leslie M. FitzGerald, president; Walter J. Pryor, first vice-president, and Charles A. Pankow, second vice-president.

ARTICLES ON DENTAL HEALTH PREPARED FOR NEWSPAPER USE

The Association's Bureau of Public Information has available a new series of 30 articles on dental health specially prepared for use in community newspapers on a daily or weekly basis. Sets of the series may be obtained free of charge on request of an authorized official of a dental society to the Bureau.

The articles cover a variety of topics including the value of fluoridation, the cause and prevention of periodontal disease and the use of dentifrices.

DENTISTS ASKED TO HELP IN KOREA AID DRIVE

Members of the dental profession have been requested to support the campaign of the American Korean Foundation to collect supplies for shipment on the Help Korea Trains which will go throughout the country during May, announced Leslie M. FitzGerald, Association president.

The campaign is endorsed by President Eisenhower and scores of national organizations are cooperating. Each dental society is asked to form a Help Korea Train committee to work with its community committee in collecting dental materials and supplies. The equipment of Korea's only dental school was destroyed during the war.

APPOINTMENT BOOK FOR 1954 IS OUT OF PRINT

The 1954 Appointment Book is now out of print. Copies are no longer available, it has been announced by the Association business office. The book for 1955 is in preparation, and may be obtained from the Order Department after May 1. The price of the Appointment Book is $2; payment should accompany the order.

President Dwight D. Eisenhower holds in his hands the invitation issued him by the Association to address the General Meeting of its 95th annual session to be held in Miami, Fla., Nov. 8-11. With the President are (l. to r): Daniel F. Lynch, Association president-elect, Leslie M. FitzGerald, president, and Senator B. B. Hickenlooper of Iowa.

COUNCIL PLANS PROGRAM FOR COMING YEAR

The Council on Registry of Dental and Oral Pathology outlined its program for the coming year at a meeting held in the Central Office April 19. The new program will begin when the Armed Forces Institute of Pathology building is ready for use. It is expected that this will be about August 1.

In attendance at the meeting were: Col. Joseph L. Bernier and H. B. G. Robinson, consultants; Carl H. Boyden, Ned B. Williams, Kurt H. Thoma, Grant Van Huysen and Henry A. Swanson, members; H. Trendley Dean, Donald A. Washburn, Gerard J. Casey and Harold Hillenbrand, observers. Dr. Swanson is chairman of the Council.

MAY MEETING TO REVIEW DENTAL HEALTH PROGRAM

Major items on the agenda for the Council on Dental Health meeting May 17 and 18 at the Central Office include a review of the Association's dental health education activities, discussion of union dental care programs, consideration of possible Bylaws revision to permit changes in the duties of the Council, and a review of the pricing formula for the Association's dental health education materials. David W. Brock is Council chairman.

DENTAL PERSONNEL DISCUSSED AT NATIONAL HEALTH FORUM

Trends in dental education, A.D.A. programs to help develop improved dental service and the effective use of dental personnel were topics presented by Association representatives at the National Health Forum held in New York March 24-26 as part of the annual meeting of the National Health Council.

The Forum discussed the problem of how to assure adequate health personnel for the nation. Speaking for dentistry were Eugene R. Westcott, B. Duane Moen and W. Philip Phair.

The American Dental Association is a member of the National Health Council, sponsor of the Forum. The Health Council is a coordinating body among 42 national organizations and professional societies in the health field.

Association president-elect Daniel F. Lynch (left) shakes hands with Rear Admiral H. Lamont Pugh, surgeon general of the U.S. Navy, at the annual meeting of the Board of Reserve Consultants to the Surgeon General. Dr. Lynch is the dental member on this board.

Dental Societies

JOSEPH S. LANDA AWARDED LORD-CHAIM PRIZE

The First District Dental Society of the State of New York has announced the award of the Lord-Chaim prize for 1953 to Joseph S. Landa for his paper on integration of structure and function of the temporomandibular joint.

The $500 prize is offered each year for a meritorious essay on any subject applying to dentistry. Dr. Landa is associate professor of denture prosthesis at New York University College of Dentistry.

ADOPT HEALTH PROGRAM RECOMMENDED BY SOCIETY

The Arkansas State Dental Association announces that its recommendations for improving the dental health education program of Arkansas schools have been adopted by the State.

A representative of the Arkansas State Dental Association has been appointed to the state's Joint Coordinating Committee for Promoting Health Education in the Public Schools. Early this year the following program was adopted.

A school excuse slip for dental visits was officially approved. A copy of the A.D.A. resolution opposing the sale of confections and soft drinks in the schools was sent each school administrator. The Arkansas Department of Health has made available to school administrators the A.D.A. *Manual of Dental Health Facts for Teachers.* The state dental society has written each dentist and urged his cooperation in the school excuse slip program.

"SHOW-DO-AND-TELL" METHOD USED IN NEW YORK PROGRAM

The "show-do-and-tell" method of education was used in the children's dental health week program of the New York Oral Hygiene Committee to demonstrate procedures used by the dentist. Small groups of children went from clinic to clinic where they were shown the methods of maintaining dental health and were given an opportunity to try some of these methods themselves.

In addition to the clinics there were magic presentations, motion pictures, toothbrushing demonstrations and chalk talks.

In the schools program a total of 230 speakers reached a school audience of

Shown at the Arkansas State Dental Association annual meeting held April 4-7 in Little Rock, Ark., are (l. to r.): William R. Alstadt, trustee of the twelfth district; Don Hamm, secretary; Therman B. Smith, president; Hugh Moseley, president-elect of the Arkansas Association, and Harold Hillenbrand, secretary of the American Dental Association.

Three youngsters learn about dental health during children's dental health week in New York February 1-6. Major health agencies, education and community groups cooperated with the dental profession in the event. Special activities took place in the schools. Radio, TV, newspapers and magazines carried dental health messages.

215,000. Dentists who participated were given a two-session course in public speaking so that they could present dental materials more effectively.

In addition to the children's section of the program there was a section designed for the professions. It covered both children's dentistry and methods of using health education materials in teaching dental health to parents and children.

The Oral Hygiene Committee, sponsor of the dental health week program, represents the local dental societies and members of allied professions.

WORCESTER SOCIETY MEMBERS FAVOR FLUORIDATION

A poll of the members of the Worcester (Mass.) District Dental Society shows that as of March 15 its members favored fluoridation by better than three to one. Of 227 members 171 voted in favor, 15 were opposed, 10 were away in service and the rest were undecided or made no statement.

The Society has voted three times in favor of fluoridation and has recommended to the Board of Health and the City Commissioner of Public Health that the water supply of the city of Worcester be properly fluoridated at the earliest possible date.

The Worcester Society reports that the Massachusetts Public Health Committee recently voted 14 to 1 against the five or six antifluoridation bills it was studying.

GENERAL SNYDER HONORED AT TEXAS DINNER

A testimonial dinner and meeting in honor of Maj. Gen. Oscar P. Snyder, new chief of the Army Dental Corps, was held April 14 at Brooke Army Medical Center, Fort Sam Houston, Texas. The dinner was sponsored jointly by members of the San Antonio District Dental Society and Dental Corps officers of Brooke Army

Leslie M. FitzGerald, A.D.A. president (left), talks with Maj. General Oscar P. Snyder (center) and James P. Hollers, president-elect of the San Antonio District Dental Society, at a dinner given for General Snyder in Texas April 14.

Medical Center. Attending were 300 Army and civilian dentists.

Leslie M. FitzGerald, president of the American Dental Association, addressed the meeting and hailed General Snyder as "one of dentistry's outstanding citizens." He said that the general was "eminently qualified to assume the highest honor which the Army can bestow on a member of the dental profession."

General Snyder was made an honorary mayor of San Antonio and named an honorary citizen of Texas. He is a former vice-president of the American Dental Association.

National Defense

COMMISSION OFFER TO SENIORS GETS GOOD RESPONSE

The Navy Dental Corps has announced that for the present it will not need dentists from the selective service system. This action is the result of the excellent response from present senior dental classes to the Dental Corps' offer of commissions to those graduating from this year's class.

Admiral Ryan, in a letter to the American Dental Association, pointed out that the Navy will be able to satisfy its needs for approximately 300 dentists for the summer and fall months from the 1954 class. There has also been a good response to the senior dental student and intern training program, Admiral Ryan said. In fact, the Navy has actually received more applications than it can use.

Under the student training program students who have completed their junior year may apply for commissions and orders concurrently with their enrollment as seniors this fall. They will be placed on active duty with full pay while they continue their studies in the schools in which they are enrolled.

On graduation these officers will serve on active duty in the Dental Corps at least two years.

The Army and the Air Force have also reported an excellent response from seniors to its commission offer.

SELECT STUDENTS TO INTERN IN ARMY HOSPITALS

Twenty-four senior dental students who expect to receive their dental degrees in June have been selected to receive their internships in Army hospitals beginning July 1, according to an announcement made April 6 by Maj. Gen. Walter D. Love, chief of the Army dental corps.

On graduating each of the students will be commissioned as a first lieutenant in the Army dental corps reserve. He will then serve a one-year internship in one of seven Army hospitals.

WALTER D. LOVE, ARMY DENTAL CORPS CHIEF, RETIRES

Maj. Gen. Walter D. Love, Assistant Surgeon General of the Army and chief of the Army Dental Corps, retired from active duty April 30.

Walter D. Love

General Love became chief of the Dental Corps in 1950, a few months before the outbreak of the Korean war. Previously he served with the Dental Corps in the States, in China, Hawaii and

in the India-Burma area where he was chief of the dental service at a 2,000 bed hospital.

General Love was graduated from the School of Dentistry of the University of Pittsburgh. He is a member of the American College of Dentists, the Association of Military Surgeons, Delta Sigma Delta and Omicron Kappa Upsilon.

Maj. Gen. Oscar P. Snyder, a former vice-president of the Association, succeeds General Love.

DENTISTS URGED TO TAKE CIVIL DEFENSE COURSE

In accordance with a recommendation of the A.D.A. Subcommittee on Civil Defense, Russell W. Bunting, dental consultant of the health office of the Federal Civil Defense Administration, has arranged a course in civil defense training designed especially for dentists. The course is scheduled for July 21-23 at the FCDA staff college in Olney, Md. Dr. Bunting urged that as many dentists as possible attend the course.

The role of the dental profession in the nation-wide civil defense program will be discussed. The course will cover the effects of atomic and chemical warfare, organization and training of personnel and will analyze civil defense problems and tactical operations.

The cost to the dentist is five dollars a day which covers the expense of board and room on the college grounds. Applications should be sent to the Civil Defense Staff College, Olney, Md., no later than July 1.

DENTAL CLINIC ESTABLISHED BY NAVY AT NORFOLK

The Secretary of the Navy March 9 established a Dental Clinic at Norfolk, Va. The Clinic will provide complete dental services to fleet units and shore activities in the Norfolk area which have no dental facilities and will provide prosthetic dental service to units without prosthetic laboratories. Capt. John H. Paul, DC, USN, will head the clinic.

ABOUT 2,250 DENTISTS NEEDED FOR DEFENSE

Dental chiefs of the military services have estimated that approximately 2,250 new dental officers will be needed during the year beginning July of 1954. Of this total about 1,100 will be for the Air Force, about 700 for the Army and about 450 for the Navy.

The 1954 annual Army Dental Surgeons Conference held February 17-19 in Washington discussed the various developments within the Army's dental program and their implementation by the dental surgeons. Seated (l. to r.) are: Brig. Gen. Egbert W. Cowan, Maj. Gen. Walter D. Love, Brig. Gen. Oscar P. Snyder, Brig. Gen. James M. Epperly. Second row (l. to r.) are: Col. Harold G. Ott, Col. Dale Ridgely, Col. Henry R. Sydenham, Col. Roger C. Miller, Col. George F. Jeffcott, Col. Samuel R. Haven, Col. Robert E. Hammersber, Col. Gerald J. Collins, Col. Kenneth P. Fulton. Third row (l. to r.) are: Col. Clare T. Budge, Maj. Robert W. Hobson and Lt. Col. Edward P. Quarantillo.

The Department of Defense has indicated that it should be able to meet its needs from nonveteran dental students graduating in 1954 (about 1,400 of the 1,700 graduating would be acceptable), the remainder of available and acceptable 1953 graduates and the dentists in Priority I and II classification. Only after this reservoir of approximately 1,700 dentists has been exhausted will additional Priority III men be called.

GENERAL EPPERLY TO SUCCEED GENERAL SNYDER AT BROOKE

Brig. Gen. James M. Epperly has been named director of dental activities at Brooke Army Medical Center to succeed Maj. Gen. Oscar P. Snyder, who became chief of the Army Dental Corps April 30.

General Epperly was graduated from St. Louis University. He has served with the Army at posts in the States and abroad. In 1945 he became chief of the dental service branch in the Office of the Surgeon General. In 1953 he served three months in Greece to make recommendations for the dental service of the Greek National Army.

ALFRED E. TOYE AWARDED LEGION OF MERIT

Col. Alfred E. Toye, chief of the periodontics section in the dental clinic at Walter Reed Army Hospital, received the Legion of Merit recently for outstanding service in the dental service, Tokyo Army Hospital, which he headed from December 1951 to December 1953. Colonel Toye was graduated from Baltimore College of Dental Surgery, University of Maryland, and was engaged in civilian dental practice for 15 years after graduation.

Dental Education

GRADUATE COURSES OFFERED BY DENTAL SCHOOLS

Iowa • A one day postgraduate course in periodontology is being offered by State University of Iowa June 10. Staff members for the course are Albert J. Soucek, Gerald P. Ivancie, Stanley J. Cardinal and Glenn R. Carwell. Applications should be mailed to the department of oral medicine and periodontology, College of Dentistry, Iowa City.

New York University • A 30 hour course in practice management has been planned by New York University for June 14-18. The purpose of the course is to present the principles and skills needed for good patient relations. Individual training is afforded in conversational technics for meeting problems of practice. The course is under the supervision of J. Lewis Blass and Irvin Tulkin.

Applications may be obtained from the College of Dentistry, N.Y.U., New York.

North Carolina • The University of North Carolina School of Dentistry announces a series of postgraduate courses to be offered during the months of June and July. Two courses in dentistry for children are being offered as well as two in endodontics, one in periodontology and oral pathology and one in operative dentistry.

Additional information may be obtained from the department of postgraduate dental instruction, School of Dentistry, Chapel Hill, N. C.

Washington • Leonard S. Fosdick of Northwestern University, Marshall L. Snyder of the University of Oregon and David B. Law of the University of Washington will be the instructors in a course entitled "A Conference on Caries Control" offered by the University of Washington School of Dentistry in Seattle May 19.

They will discuss recent research with reference to antienzyme dentifrices, the role of diet in caries control and practical methods of caries prevention.

The University of Washington School of Dentistry also is offering a course in oral roentgenology July 15-16 under the direction of Gordon M. Fitgerald. The course has been designed to meet the needs of the general practitioner for more advanced knowledge in this field. Enrollment is limited to 12. Additional information may be obtained from the department of postgraduate dental education at the University in Seattle.

TORONTO SCHOOL RECEIVES MILLION DOLLAR GRANT

A special capital grant of one million dollars will be paid to the University of Toronto for an expansion of the College of Dentistry, it was announced recently by Leslie M. Frost, treasurer of the province of Ontario. "There are only five dental colleges in Canada," he said, "the largest of which is in Ontario. But with Ontario's population growth alone, expansion is necessary; with the demands from the other provinces, the need is immensely magnified."

TENNESSEE DENTAL SEMINAR SCHEDULED FOR JUNE-JULY

The Tennessee State Dental Association in cooperation with the Tennessee Department of Public Health is sponsoring a postgraduate dental seminar to be held in eight centers of the state during the period of June 14 to July 9.

The course is 12 hours in length. Henry M. Tanner of the University of Southern California School of Dentistry will discuss the adaptation of modern instruments and increased operating speeds to restorative procedures. Paul C. Salisbury of Northwestern University Dental School will discuss oral surgery for the general practitioner. At least 400 dentists are expected to attend.

ORAL SURGERY RESIDENCIES OFFERED BY COLLEGE

Plans for an internship program and for junior and senior oral surgery residencies have been completed by the College of Physicians and Surgeons and the San Francisco Hospital, it has been announced. The programs begin July 1.

The one year rotating hospital internship covers the fields of oral surgery, operative dentistry, prosthetics and periodontics. The salary is $120 per month.

A one year junior and a one year senior oral surgery residency are also being offered. The junior oral surgery resident will receive a salary of $175 per month and the senior oral surgery resident will receive $230 per month.

Inquiries may be addressed to the Dean of the College of Physicians and Surgeons, San Francisco.

PROPOSE STANDARD TEST FOR STUDENTS FROM ABROAD

A standardized examination for applicants from other countries will be used at dental schools next year on an experimental basis, it was decided at the American Association of Dental Schools meeting held in French Lick, Ind., March 21-24. This is the first time such a program has been attempted on a national basis.

The examination will be administered by the A.A.D.S. committee on foreign credentials in cooperation with the A.D.A. Council on Dental Education.

The meeting also proposed the setting up of institutes for dental school teachers in which methods of teaching would be studied.

The trend toward short answer (pencil and paper) tests was approved but the continued use along with them of essay examinations was felt to be worth while.

ILLINOIS ANNOUNCES PROGRAM OF TELEPHONE INSTRUCTION

A program of telephone instruction is being offered again by the University of Illinois College of Dentistry the second Monday of each month from November 1954 through March 1955. Subjects covered will be emergency problems in dental practice, problems in control of pain, in treatment planning, in occlusion and in caries control.

Dental societies or groups participating will receive film strips for projection to illustrate the talks and manuals to augment the programs. The charge to each society is $300. For groups which cannot meet the second Monday of each month disk or tape recordings will be furnished, it has been announced. The deadline for enrollment is June 15.

Further information may be obtained from the postgraduate studies extension division of the University of Illinois College of Dentistry, Chicago.

International

FEATURE ESSAYISTS FROM MANY COUNTRIES AT CONGRESS

The program of the International Congress of Dental Science to be held May 26-31 at Knocke-sur-Mer, Belgium, includes essayists from many countries. American essayists participating are A. S. Posner, research fellow on leave from the National Bureau of Standards, and Louis I. Grossman of the University of Pennsylvania.

In addition to the essays there will be clinics, motion pictures and a scientific exhibit. A program for the ladies is also planned.

FRANK COLYER, CURATOR OF ODONTOLOGICAL MUSEUM, DIES

Sir Frank Colyer, for over 50 years honorary curator of the Odontological Museum at the Royal College of Surgeons of England, died March 30 at the age of 88.

Acknowledged as the greatest authority on early dental appliances he published a book in 1952 entitled *Old Instruments Used for Extracting Teeth.* Among his other published works are *Dental Disease in its Relation to General Medicine, Chronic General Periodontitis* and *Dental Surgery and Pathology.*

Sir Frank was consulting dental surgeon at Charing Cross Hospital and the Royal Dental Hospital of London. He was also consulting dental surgeon to the Minister of Pensions.

A Colyer Medal was set up in his honor during his lifetime by the Faculty of Dental Surgery of the Royal College of Surgeons. It is awarded for "distinguished labors, researches and discoveries" in the field of dental surgery.

DENTISTS ASKED TO SUPPORT INTERNATIONAL ORGANIZATION

By special arrangement, a supporting membership in the Fédération Dentaire International and a subscription to the

Officers of the Canal Zone and Republic of Panama Dental Societies are shown at a dinner held during the Inter-American Medical Convention in Panama March 24-26. They are (l. to r.): A Díaz, secretary-treasurer of the Asociación Odontológica de Panamá, R. S. Arcia, vice-president; R. M. Valdez, president; Capt. K. M. Broesamle, DC, USN, president of the Panama Canal Zone Dental Society; Capt. F. M. Kyes, DC, USN, guest essayist, L. E. Fontaine, vice-president, and Lt. Cmdr. A. L. Teitel, secretary-treasurer. About 500 physicians, dentists and nurses from 11 countries attended the convention.

International Dental Journal have been made available to Association members at a cost of nine dollars per year. In view of the importance of international cooperation among dentists, officers and trustees of the Association have urged that each U. S. dentist join the F.D.I. immediately.

Checks may be sent to Philip E. Adams, treasurer, 170 Marlborough St., Boston 16.

CANADA NEEDS MORE DENTISTS SAYS ASSOCIATION

That Canada needs more dentists is the conclusion of the Canadian Dental Association. A recent survey of dental personnel shows that although Canada has a rapidly increasing population, there are only 83 more practicing dentists in 1954 than there were in 1953. With an even smaller number graduating during 1954 a serious situation has arisen. The Association said, "Any sizable increase in dental personnel depends upon the establishment of increased facilities for the training of dentists."

Statistics show that of nine provinces reporting four had maintained or slightly improved their dentist-population ratio over 1938 while in five the ratio had worsened. British Columbia had the best dentist-population ratio, 1 dentist to 2,132 of population. New Brunswick, with 1 dentist to 4,621 of population, had the worst.

GERMAN DENTISTS ORGANIZE DENTAL REMEDIES COMMITTEE

The publication of a list of tested dental remedies will be one of the first tasks of the newly organized Dental Remedies Central Committee, it was announced recently by the National Union of German Dentists. The Committee has been patterned after the American Dental Association Council on Dental Therapeutics.

One of the difficulties faced by the German Committee is the lack of government control of drugs.

The Council on Dental Therapeutics received a letter thanking it for its help in providing the information necessary for the foundation of the Committee.

Public Health

MINNEAPOLIS VOTES FOR FLUORIDATION PROGRAM

The Minneapolis City Council on March 12 voted ten to two in favor of fluoridating the city water supply. The program is to begin shortly, it has been reported.

The city of Detroit Lakes and the city of Willmar also voted for fluoridation. Crookston started its program March 25. With all these programs operating, Minnesota will have over one million people, one third of its population, drinking fluoridated water.

CHICAGO ALDERMEN RECOMMEND CITY START FLUORIDATION

A City Council subcommittee April 12 recommended that Chicago fluoridate its water supply "as a health measure." The recommendation was unanimously approved and will now be considered by the Council Committee on Health. Alderman Alfred J. Cilella, subcommittee chairman, said that his committee had been swamped with letters from student and parent-teacher groups urging fluoridation.

ALACHUA, FLORIDA OFFICIALS APPROVE PROGRAM

THE JOURNAL has been informed that a study in Gainesville, Fla., designed to provide information on the amount of dental care required by children in a community using fluoridated water, has the approval of the Florida State Board of Health, the Alachua County Health Unit and the Alachua County Dental and Medical Societies. These groups will cooperate on the study with the United States Public Health Service. A story on the project in the March JOURNAL did not mention the local groups by name.

NEW DENTAL DIRECTORS NAMED IN TWO STATES

The appointment of new dental directors has been announced by two states. David R. Wallace, former district dentist for the Pennsylvania State Department of Health, has been named director of dental health in the Virginia State Department of Health. Paul Mallinckrodt, former director of the Jackson County, Mo., Dental Health Program, is the new director of the division of dental health of the South Dakota State Health Department. Both men assume their new duties in May.

W. T. WRIGHT, FORMER USPHS OFFICER, DIES

W. T. Wright, Jr., the first dental officer to be appointed Assistant Surgeon General of the United States Public Health Service, died March 20.

Dr. Wright was appointed Assistant Surgeon General in 1941. He served with

W. T. Wright, Jr.

the USPHS from 1920 until the date of his retirement in 1950. He was instrumental in perfecting the treatment of Vincent's infection.

Dr. Wright was graduated from the University of Maryland, was a member of Xi Psi Phi fraternity and an honorary member of Omicron Kappa Upsilon.

Research

I.A.D.R. NOVICE AWARD GIVEN TO LEO KORCHIN

The Novice Award, given for research papers presented for the first time, was awarded to Major Leo Korchin, D.C., U.S.A., of Georgetown University at the meeting of the International Association for Dental Research held in French Lick, Ind., March 19-21. Dr. Korchin reported that starch sponge implantations retarded healing and increased the incidence of alveolar osteitis.

There were 128 research papers presented orally and 34 more read by title at the meeting. The papers indicated the continuing trend toward increased research in the functional sciences of physiology, biochemistry, bacterial physiology, enzymology, endocrinology and growth and development. Many papers were also presented by the dental materials group.

The I.A.D.R. elected 83 new members which brings the total membership to about 860. Some 428 persons attended the meeting.

RESEARCH FELLOWSHIP HOST TO VISITORS FROM ABROAD

The Dental Research Section of the National Bureau of Standards plays host from time to time to visitors from abroad who come to see the work being done by the A.D.A. Fellowship. Recent visitors to the Fellowship include Eihachiro Tanaka of Japan, P. J. Stoy from Northern Ireland, Francis Beltrami of France and E. T. Green of Nigeria.

Dr. Tanaka is an instructor in the Research Institute for Iron and Other Metals at Tohoku University, Katahiracho, Sendai, Japan. Professor Stoy is from the School of Dentistry of The Queen's University of Belfast, Northern Ireland. Dr. Beltrami is director of the School of Dentistry, University of Marseille, France, and Dr. Green is government dental surgeon, medical department, Enugu, Nigeria, Africa.

RESEARCH GROUP AFFILIATED WITH SCIENCE ACADEMY

The Washington, D. C., section of the International Association for Dental Research was recently affiliated with the Washington Academy of Sciences. E. G. Hampp, senior research fellow of the American Dental Association at the National Institute of Dental Research and president of the Washington section of the I.A.D.R., was elected vice-president of the Science Academy.

The affiliation came about, it has been reported, largely through the efforts of H. J. Caul, research associate at the NBS, who was president of the Washington I.A.D.R. in 1952-53.

General

MANUFACTURER MISBRANDS DENTAL DEVICE, COURT FINDS

The Siampaus Manufacturing Company, maker of Ko-rekT dental device, was found guilty in federal court recently of misbranding its product. Mr. Siampaus received a suspended 90 day sentence and was put on probation for one year.

The device, advertised as a toothbrush substitute, consisted of two counter-rotating rubber disks mounted on metal shafts and turned by a hand crank. Its maker claimed it would prevent and heal infection of the gingiva, prevent caries, heal periodontal disease, eliminate tartar formation, prevent loss of teeth, increase longevity and rebuild the mandible.

In the opinion of the court, said the judge, these were flagrant claims.

ROENTGENOLOGY WORKSHOP TO PRESENT LATEST TECHNICS

The Second Annual Roentgenology Workshop will be held at the University of Washington School of Dentistry in Seattle July 17-19. The purpose of the Workshop is to present the latest advances in technics as well as to discuss problems encountered in practice. An evaluation of the use of roentgenology in the various fields of dentistry will be made.

Enrollment in the workshop is limited to those who have participated in past workshops or who have attended accredited courses in roentgenology. Further information may be obtained from Wayne Gourley, 1007 Cobb Bldg., Seattle 1.

ROLAND E. MORSE ELECTED HEAD OF NEW YORK ACADEMY

Roland E. Morse took office as president of the New York Academy of Dentistry at its meeting April 8. He succeeds Ralph J. Bowman. Others to assume office with Dr. Morse are Willard T. Keane, president-elect, and C. Raymond Wells, vice-president. William Ward Tracy and Gustav P. Frahm continue as secretary and treasurer respectively.

QUESTIONNAIRES MAILED IN HYGIENISTS' INVENTORY

A national inventory of all dental hygienists has just been launched according to Margaret E. Swanson, executive secretary of the American Dental Hygienists' Association. The first of its kind in this country, the inventory is expected to reveal basic facts, current trends and future needs of the hygienist's profession.

Questionnaires mailed to all active and retired dental hygienists seek information on such subjects as conditions of employment, type of education and duration of stay in the profession.

Information given by hygienists will be held in strict confidence, Miss Swanson said. The data will be analyzed by the Division of Dental Resources, U. S. Public Health Service, which has participated in the planning of the inventory.

Hygienists are asked to mail the completed questionnaires not later than May 17 to Miss Swanson, 1735 Eye St., N.W., Washington, D. C.

DEATH OF PAUL BOMBERGER, DENTAL EDITOR, REPORTED

Paul E. Bomberger, Pennsylvania dentist and civic leader, died April 9 at the age of 59. He had been editor of the Pennsylvania Dental Journal since 1952 and had written many articles for various dental publications.

At the Cleveland meeting of the American Dental Association last September, Dr. Bomberger was appointed a member of the Council on Journalism.

Paul E. Bomberger

He was past president and trustee of the Pennsylvania State Dental Society and past president of the University of Pennsylvania Dental College Alumni Association.

Dr. Bomberger was a charter member of the Lancaster Branch of the American Association for the Advancement of Science, served on the staffs of the Lancaster General Hospital and the Rossmere Tuberculosis Sanatorium and was a director of the Lancaster Cleft Palate Clinic.

ENDODONTISTS' ASSOCIATION INSTALLS OFFICERS

The American Association of Endodontists at its annual meeting February 6 and 7 installed the following officers for 1954: N. Weir Burkman of Birmingham, Mich., president; Harry J. Healey of Indianapolis, president-elect; John R. Pear of Grosse Pointe, Mich., vice-president; Vincent B. Milas of Chicago, secretary; Irwin A. Epstein of St. Paul, treasurer, and Victor H. Dietz of St. Louis, editor.

ACADEMY OF DENTAL MEDICINE TO HOLD MEETING IN MAY

"Diagnosis and Treatment Planning" will be the theme of the scientific sessions at the annual meeting of the American Academy of Dental Medicine, May 14-16, in Philadelphia. Lectures and discussion groups will include all phases of the subject.

A program of entertainment and sightseeing is being arranged for those attending and for their families. Programs and reservations are available from the national secretary, William M. Greenhut, 124 East 84th Street, New York 28.

NEW SOCIETY FORMED IN FIELD OF ANESTHESIOLOGY

A new society in the field of anesthesiology has been formed. Members of the American Dental Society of Anesthesiology met February 6 and 7 in Chicago to adopt a constitution and elect officers for the current year. Elected were: William B. Kinney of Ogden, Utah, president; H. M. Stebbins of Lake Charles, La., vice-president, and Jay H. Mervis of Clairton, Pa., secretary-treasurer.

The Society plans to hold its first scientific session and next business meeting during November in Miami, Fla.

Also . . . A survey conducted recently by the A.D.A. Council on Dental Health showed that Wisconsin was the first constituent society to endorse fluoridation. The Wisconsin society went on record favoring fluoridation in 1945. . . . A reunion of the class of 1904, University of Maryland Dental School, will be held June 3-5 in Baltimore. Information can be obtained from Walter E. Green, 3717 Hillside Road, Baltimore. . . . The CIO Executive Board endorsed fluoridation at its March meeting. . . . A recent election in Fargo, N. D., showed the voters in favor of continuing their fluoridation program. . . . A dental research facility was approved recently for the Naval Training Center at Bainbridge, Md. The first problem scheduled for study is the relationship of salivary enzymes to diseases of the oral cavity. . . . George Bugbee, president of the Health Information Foundation, is secretary of the Inter-Association Committee on Health. He succeeds Harold Hillenbrand, A.D.A. secretary. . . . Main speakers at the Ark-La-Tex Dental Congress to be held August 16 in Shreveport, La., are Walter Colquitt, Daniel F. Lynch, and Fred W. Owen. . . . The class of 1922 of the New York College of Dentistry will hold a reunion June 10 at the Hotel Statler.

International Correspondence

NEWS FROM GREAT BRITAIN

W. Stewart Ross writes that the British Dental Association is now 75 years old. Forty-two years after its founding an Act of Parliament was passed which made it illegal for anyone to practice dentistry without a license. Since then the government has restricted the dental profession in Great Britain perhaps more than any other profession. It is still illegal for a dentist to employ a dental hygienist; in fact, only a handful of such workers have been trained by the Ministry of Health. Hygienists are only allowed to work in hospitals or dental clinics under the School Dental Service. Since the National Health Service came into being, the Ministry of Health has cut the remuneration of dentists working in the Service. These are a few examples of government action affecting dentistry.

The British Dental Association has consistently objected to the arbitrary cuts ordered by the Ministry of Health and seeks to prove that the earnings of the average dentist are now lower than those recommended by the Spens Committee. The Spens Committee was set up by the Ministry before the beginning of the National Health Service to advise on the scale of fees to be charged by the dentist. A questionnaire has now been sent out by the Association to some 4,700 dentists asking them to supply income and expenditure figures so that a true assessment can be made of the income of dentists. These figures will be compared with those supplied by the Inland Revenue Authorities and it is hoped that the results will lead to the restoration of the income cuts made by the Ministry of Health.

NATIONAL HEALTH SERVICE

Jack Gilbert sends some interesting observations on the interest in dental matters shown by the present Minister of Health. Ever since the introduction of the General Dental Services of the National Health Service in Great Britain, a state of animosity has existed between the Ministry of Health and those members of the profession within the Health Service. Financial cuts and the application of new, often irksome, regulations by successive Ministers of Health all helped to engender feelings of resentment.

THE JOURNAL of January 1954 noted the rapprochment arising between the British Dental Association and the present Minister of Health, the Rt. Hon. Iain N. Macleod. Mr. Macleod visited the headquarters of the British Dental Association last December. During that visit he expressed his hope that the meeting might initiate a new era of improved relations between the Ministry of Health and those working within the National Dental Services. Since then Mr. Macleod has attended a number of meetings of the profession. His presence at these meetings and his sincere desire to understand and meet the problems of those working in the Service cannot fail to promote an improvement in the attitude of the profession towards those ultimately responsible for the administration and effectiveness of the Public Dental Services in Great Britain. This improved situation is indeed welcome.

ROYAL COLLEGE OF SURGEONS

Sir Wilfred Fish writes about the rebuilding of the College as follows. The Royal College of Surgeons, which was heavily damaged by air raids during the war, has already been partially restored. The building scheme, however, is being combined with a very considerable extension of the buildings. In addition to the large odontological museum, of which Sir Frank Colyer is the honorary curator, 3,000 square feet of floor space have been allocated to the Faculty of Dental Surgery. There are already departments in the College for research and postgraduate teaching in anatomy, physiology and pathology and it would seem likely that the new facilities will be devoted to teaching and research in the special dental aspect of these basic sciences; but nothing has been settled and the usual problems of staff and finances are engaging the attention of the Board of Faculty. There is at present no endowment fund at all from which these new activities can be financed. A department of this kind would not only meet a pressing demand for teaching in these subjects but research of the kind proposed, carried out in association with the existing basic science departments of the College, might well open up new vistas of dental knowledge.

STATISTICS

Cyril de Vere Green thinks that many dental practitioners are at last taking an interest in the statistics of manpower connected with the dental profession. He writes of the startling realization that the dental profession is apparently slowly dying out in Great Britain. There are the same number of qualified dentists (8,000) in active practice as there were 25 years ago but their average age has risen considerably. Added to this fact is the knowledge that there are many vacancies in the dental schools in the United Kingdom.

The situation is bound to become more serious for included in the total of approximately 10,500 dentists in practice in Great Britain and Northern Ireland are about 3,500 who will probably retire within the next ten years. This will leave a very depleted profession to serve a population of 50 million. No attempt is made here to suggest a solution or to forecast any outcome except to say that with an increasing demand and a limited supply it is possible that private practice may again flourish in spite of the National Health Service.

ITEMS OF INTEREST

Guy's Hospital Dental School held its annual clinical meeting March 6. Some 600 alumni returned for the day and 345 attended the dinner in the evening. This year I was particularly struck with the wealth of clinical material the School received for treatment and with the splendid work the students are doing. Two things impressed me. The first was the most pronounced case of mandibular prognathism I have ever seen, successfully corrected by a surgical dental team using the Kostecka method plus splints. Unbelievable as it sounds, the displacement necessary to obtain a working occlusion was about one and one half inches.

The other was a demonstration of the root canals in human teeth. These were prepared after the methods of our colleagues in South America, Aprile and Aprile (Rev. Odontologica 33:686, 1947). The root canals were impregnated with India ink and rendered visible by the decalcification of the teeth and immersion in phenol. This renders the substance of the tooth transparent and shows the tortuous nature of the canals and the presence of lateral canals, interconnections between the individual canals where more than one canal exists in a root and the deltalike branching of the canals at the apexes of certain teeth. This very impressive demonstration, most skillfully done, emphasized the possible importance of using pressure to overfill root canals with a resorbable paste; this method would take care of the small canals which otherwise would not be filled.

The Gibbs' Traveling Scholarship 1954, arranged by the British Society of Periodontology to carry out research on dental health education for the public in the United States has been awarded to Arthur Parrott of Taunton, Somerset. Mr. Parrott will be leaving for the United States in May to carry out his tour of investigation which Harold Hillenbrand has arranged for him.

The American Dental Society of London held its annual clinical meeting on March 24 at the Eastman Dental Institute. The standard of the clinic was high and it was especially good to see Lt. Colonel V. A. Pugnier, U.S.A.F., give a very interesting clinic on partial denture design. This collaboration between our United States colleagues in the armed services and the members of the dental profession in the United Kingdom is of great value and importance and it would be a great shame if the proper encouragement was not forthcoming from the "powers that be" in the United States services to continue and maintain the close cooperation which has existed during the past few years.

Gerald H. Leatherman,
D.M.D., F.D.S.R.C.S.

The Reader Comments

PROTESTS TV DENTISTRY PROGRAM

Editor's note: The TV program *Omnibus,* which has gained an extremely high rating for itself, fell to an unexpected low with its film on dentistry March 21. Many letters of protest, of which the one printed below is typical, were received by the producers of the program. The American Dental Association also protested and the *Omnibus* program of March 28 carried an apology to the many dentists who had written in.

I want to express my resentment at your film of "Painless Dentistry" shown Sunday, March 22. I was of the opinion you would give our profession the same scientific standing accorded physicians in showing the improved method of treating arteriosclerosis. Instead, I saw a horror picture, the type that gives small children nightmares and makes adults apprehensive about their next appointment.

I feel I am expressing the view of the entire membership of the American Dental Association in relegating this scene of torture back to the Stone Age where it belongs. Dentistry as taught in our colleges today is considered the best in the world. Young men come from all corners of the globe to learn our methods of restoring proper mastication and esthetics. This treatment is given with practically no discomfort to the patient.

I cannot imagine why you should resurrect an old picture taken in England possibly many years ago and use it on your costly television time to be viewed by millions of Americans.

J. G. Timborous

RELIEF FUND CONTRIBUTIONS OF DENTISTS IN FEDERAL SERVICE

The Association News Letter of February 15 contains a list of contributions by constituent societies to the Relief Fund. Take special notice of the contributions of members of the Federal Dental Services; Air Force 71.9 per cent, Army 52.8 per cent, Navy 47.8 per cent, Veterans Administration 37.6 per cent.

It seems to me that the members of the Federal Dental Services have forgotten the privileges they now enjoy (high rank and higher pensions) were made possible by the Association.

You members in the Federal Service make a decent and more generous contribution to the A.D.A. Relief Fund! Help the civilian members who will never receive a federal pension!

P. L. Connor

THE RUBBER DAM IN AIR-DENT TECHNIC

The rubber dam has figured in the practice of dentistry for many years. Because of changes in technic and operative procedure, it has received relatively little consideration of late. But with the advent of the Air-Dent machine, the rubber dam has come to prominence and has been damned. Why dentists rebel at the thought of this little piece of rubber is hard to comprehend.

Being a dentist who uses air abrasive, I would like to say a few words on how to apply or adjust the rubber dam.

First of all, the size of the dam is very important. A 6 by 6 piece should be adequate for all cases. The rubber dam holder should have metal clips and be held in place by a band that fits around the patient's head.

If the holes in the dam are spaced just as they are on the punch, there will be sufficient space between the teeth and plenty of visibility for working.

Another important consideration is to use the proper size hole for the type of clamp to be used. A molar clamp requires the biggest hole; otherwise, the dam will tear. For the bicuspid clamp the second largest hole is recommended. The holes should be punched according to the type of teeth to be ligated. The dentist should not forget to use the little rubber dam weight; it will prevent the dam from fluttering in the suction from the hood on the machine.

I have been asked how long the nozzle lasts through which the abrasive comes. There are two nozzles; straight and right-angle. I have used the same right-angle nozzle for about a year. This may sound as if it contradicts the prediction made by those who instructed the first few classes in this technic. Nevertheless it can be done. The method is to increase the flow of abrasive. The pressure remains the same and if the nozzle opening does enlarge a little this addition of abrasive will produce very good results.

Harold J. Roach

Book Reviews

ORTHODONTIC THEORY AND PRACTICE

By Samuel Hemley, D.D.S. Second edition, 591 pages with 369 illustrations. Index. Price $14.50. New York, Grune and Stratton, 1953.

Dr. Hemley's textbook includes a study of the evolution of orthodontic theories and Angle's appliances. The possibilities and limitations of orthodontics, as well as its objectives are discussed.

A large portion of the book is devoted to discussing the limitations imposed by the biologic factors which influence occlusion, thus laying the groundwork for evaluation of the various hypotheses that have been advanced, and for a better understanding of the growth and development of the human dentition.

A more practical approach to the clinical application of cephalometric roentgenography could have been included in Dr. Hemley's book, together with a thorough discussion of the role that functional analysis of occlusion plays in the diagnosis of cases of malocclusion.

There is very little discussion of appliances other than a history of the development of the pin and tube and the edgewise appliances.

This book would serve best as a text for undergraduate and some postgraduate courses in orthodontics.

William F. Ford, D.D.S.

THIRTY-THIRD ANNUAL REPORT OF THE STRONG-CARTER DENTAL CLINIC

By the Strong-Carter Clinic. 48 pages with illustrations. Honolulu, Hawaii, Palama Settlement, 1953.

Thirty-three years ago, in 1920, the Strong-Carter Dental Clinic began providing free dental service to elementary school children who could not afford treatment by a private dentist. In 1921 a school for training dental hygienists was opened and the first class of 11 was graduated in 1922. In 1953, the year covered by this report, the Clinic treated 4,807 children and opened a branch in the Kaimuki area. The Territorial Legislature had appropriated $20,000 for the 1953-55 program of the University of Hawaii dental hygiene training school, which has replaced the original Clinic hygienist program. The past 33 years of the Strong-Carter Clinic have meant progress to Hawaii.

The 1953 Clinic report describes in detail the composition of the clinic staff, cost of operation, type of service rendered and working time required to perform these services. The ages, racial ancestry and record of attendance of patients are carefully tabulated.

A staff of seven dentists, one dental hygienist and seven ancillary workers were employed by the Clinic. A total of 4,807 elementary school and pre-school age children were treated at an average cost of $15.47. This was 8.19 per cent less than the cost of the year previous. The average number of permanent teeth extracted per 100 children in 1953 was 10.78 compared with 16.08 in 1952.

The working day for the clinic staff was 6.5 hours. An average of 94 patients were treated per day. Total working days were 265.

The Clinic's record of extractions is an interesting one. During the war years, higher earnings made children of many families ineligible for Clinic care. With the economic downturn and the readmittance of these children to the Clinic, a sharp rise in the rate of extractions took place. In the years away from the Clinic the youngsters had had little or no dental care.

The extraction rate curve shows how important is a program of uninterrupted care. It also might be suggested that the children of Honolulu would benefit from a dental health education program designed to reach their parents, so that in periods of higher earnings when free care is not available children's dental care might still achieve a priority spot in the family budget.

D. Zabin

PUBLIC HEALTH EDUCATION, ITS TOOLS AND PROCEDURES

By H. E. Kleinschmidt, M.D., and Savel Zimand. 302 pages. Three appendixes and an index. Price $4.50. New York, The Macmillan Co., 1953.

The authors, well known in the field of public health education, have succeeded in making the subject interesting, educational and instructive. They begin with the history and progress of education in public health and then develop the various tools used in the various programs.

The student in public health education will find good definitions of its fundamentals and

principles, and good illustrations of the purpose and utilization of the several media—the spoken word, the printed word, exhibits, radio and television.

As the dentist is a figure in public and community health organization whether he is public health administrator or practitioner, he should find this text helpful not only in the preparation of the talk, pamphlet, new release or radio and television appearance, but also in the solution of the dental health education problems of his community.

The book discusses the isotype method of visual education in Appendix I and gives the reader a list of useful books and pamphlets in Appendix II. In Appendix III is found a list called "Sources of Material and Information of Health Education" which may be very useful to the student, the practitioner, the specialist and the consultant.

Harry Strusser

YEAR BOOK OF DENTISTRY (1953-1954 SERIES)

By Stanley D. Tylman, D.D.S., M.S.; Donald A. Keys, D.D.S.; John W. Knutson, D.D.S., Dr. P.H.; Harold J. Noyes, D.D.S., M.D; Hamilton B. G. Robinson, D.D.S., and Carl W. Waldron, M.D., D.D.S. 493 pages with 337 illustrations. Index. Price $6. Chicago, Year Book Publishers, Inc., 1954.

Excerpts from dental periodical literature from September 1952 through August 1953 are included in the dental volume of the *Year Book*, 1953-1954 series. The six specialists who have edited the preceding year books for dentistry are again responsible for selecting and compiling material from United States and foreign publications.

Subject matter is classified as follows: diagnosis, pulpal and periodontal diseases and related pathology, caries, public health, orthodontics, surgery and related pathology, and restorative and prosthetic dentistry.

Roentgenologic technic in endodontic procedures, in temporomandibular disorders, and in tumor diagnosis are considered in the section on diagnosis. Biopsy technics, psychosomatic factors and hysterical manifestations are also touched upon. The importance of the dentist's eyesight in successful diagnosis of oral conditions and the methods of protecting vision are discussed.

Diseases of the pulp and of the periodontal tissues are considered in one section. Selections include reports on current research in these two specialties, on antibiotic and hormone therapy, and on toothbrushes and toothbrushing technics in the prevention and control of periodontal disease.

There is extensive coverage of research projects in the caries field, together with material on various dentifrices containing penicillin, chlorophyll and other additives.

It is natural that a book of this type should reflect topics of current interest and importance to the profession and, as would be anticipated, fluoridation is prominently emphasized in both the caries and public health sections.

New developments in dental implantation are included in the comprehensive division devoted to all phases of prosthetics.

The size and format of the volume are similar to previous editions. Paper, type size and photographic reproduction are adequate. There are both author and subject indexes. This volume of the *Year Book* continues to serve the purpose for which the publication is obviously designed; that of a quick, convenient and comprehensive reference to current dental periodical literature.

Martha Ann Mann

HEALTH YEARBOOK 1953

By Oliver E. Byrd, Ed.D., M.D. Eleventh edition. 280 pages. Index. Price $3.50. Stanford, Calif., Stanford University Press, 1953.

This Health Yearbook was formerly known as Health Instruction Yearbook. It contains 281 articles, abstracts from 101 different professional journals and includes over 300 authors. Practically all of the articles appeared between July 1952 and June 1953. It is divided into 21 chapters according to specialized classification such as nutrition and health, school health, occupational health and national health.

The subject matter varies widely, from the effects of comic books on children to the world prevalence of leprosy. In a book with so wide a distribution of subject matter, we cannot expect to find too many listings under any one specific heading. The résumés are skillfully handled. There are 14 references to dental health, including several items on fluoridation.

I do not quite agree with the foreword that this book will prove to be a well-indexed ready reference to the latest developments in the health field. It is true it is well indexed and is a convenient reference book, but its content is of necessity so varied and brief that its real use would rather be in the form of a stimulant to further investigation of a specific subject. While it might prove of interest and

value to the casual worker in any of the related fields of health, it certainly is not to be considered an adequate reference for the serious student in public health. We frankly find no place for it in the dental library.

It represents a tremendous amount of work on the part of the author and is well organized and annotated.

H. Shirley Dwyer

TRAINING MANUAL FOR THE DENTAL CHAIR ASSISTANT

By L. H. Schwarzrock, D.D.S. 124 pages with 8 illustrations. Index. Price $4.85. Minneapolis, The Loren Press, 1953.

The author, very capably, has written in fine detail, a manual to aid the untrained dental assistant to become more proficient in her duties so that the best care can be given patients with a minimum of time and effort.

The general information in the manual does not always apply to each office, but the author has the foresight to leave ample space on each page for additional information which would be helpful and which could be added by the individual dentist. After the dental assistant has read the manual, it should be discussed with her by the dentist.

The division of the book into sections stresses the aims and objectives of a good chair assistant. General information is included in a section as well as the psychological approach in developing a well organized office. The sequence of each operating procedure and the material required for laboratory work are outlined, but since they are based on the author's experience they may need to be modified to suit individual purposes.

Instructions for care of equipment is included. The last section is devoted to the "come-up files" and a listing for each day.

There are a few illustrations describing dental anatomy, instruments and equipment. However, more illustrations would be helpful.

Evelyn E. Maas

ORAL HISTOLOGY AND EMBRYOLOGY

Edited by Balint Orban, M.D., D.D.S. Third Edition. 350 pages with 263 illustrations, 4 in color. Index. Price $8.50. St. Louis, C. V. Mosby Co., 1953.

The third edition of this text follows the plan of the second edition in format. The page content, chapter for chapter, follows very closely that allotted in the second edition. This does not imply, however, that the book is a reprint of the previous edition. On the contrary the editor's aim in this revision, "to eliminate throughout the book statements that could be misinterpreted or cause confusion," has been carried out extremely well.

The use of previous editions of this text in a course on oral histology for freshmen dental students left much to be desired. The clarification of confusing statements, which were very evident in the second edition, can be noted throughout the new edition.

The most marked changes are contained in the chapter on enamel. Recent investigations on the structure of enamel are included in the text material. This difficult subject is presented in a way that should lead to a clearer understanding by beginning students in dentistry.

The editor has deleted from the chapter on glands of the oral cavity "the rather cumbersome details." In some instances course content in this subject may have to be augmented by the instructor. However, we do not find the deletion objectionable.

Each chapter is followed by a series of references which is neither too long nor too brief, but gives the student the opportunity to pursue the various chapter contents further without an exhaustive reference list.

This edition is well written and illustrated. The editor has brought the material to the student level of comprehension. It is an excellent edition for use by those concerned in the teaching of oral histology. The book will also prove to be valuable to the busy practitioner of dentistry.

Alton D. Brashear

ODONTOLOGIA Y MECANICA DENTAL. ASOCIACION ODONTOLOGICA ARGENTINA

By the Argentine Dental Association. 288 pages. Index. Price about $1.50. Buenos Aires, Argentine Dental Association, 1952.

This book, the result of a study by the Argentine Dental Association on "the problems which arise between the public, the dentists and the laboratory technicians," represents "an effort to reach the root of these questions, bringing together in one work all the background and the philosophy maintained by the dentists in opposition to certain explicit and implicit aspirations of the technicians."

The comprehensive investigation covers relationships between the clinic and laboratory, organization of dental laboratories, schedules of fees, aspirations of technicians, their labor organization, training, professional standing, the relation of dental prostheses to public health, responsibility of the dental profession in the matter of prostheses, intrusion by the

technicians and Argentine legislation in regard to dental technicians.

The last chapter presents a summary of the situation. "In spite of all its deficiencies, of which the profession is well aware, dentistry has made and is still making an effort in behalf of those in need of prosthetic services which could never be achieved by the technicians. Prostheses demand a medical, therapeutic and scientific knowledge that no technician could possess."

In the opinion of the reviewer, this is the most complete study to date on a fundamental aspect of dentistry. Its translation into English would be of great usefulness.

M. Muruzábal

TRICHLORETHYLENE ANESTHESIA

By Gordon Ostlere, M.A., M.B., B. Chir., D.A. 83 pages with 5 illustrations. Index. Appendix. Price $2.25. Edinburgh and London, E. & S. Livingstone Ltd., 1953.

This well-written and easily readable book is a comprehensive review of the scientific literature on trichloroethylene. The author cites 282 references. He comments unobtrusively upon his own experiences with the drug.

Physical and chemical characteristics, pharmacology and toxicology are stressed. The author concludes that trichloroethylene in the purified grades which are generally available for use by inhalation are effective and safe if properly administered. Fifteen pages are devoted to clinical applications, including a page on dental uses.

The book is especially useful for teachers, research workers and others who wish to have a detailed knowledge of the chemical and physical characteristics and the biologic effects of trichloroethylene.

PHARMAKOLOGIE (PHARMACOLOGY)

By L. Lendle and R. Weigmann. 160 pages with 19 illustrations, 3 in color. Not for sale in separate issues. München, Urban & Schwarzenberg, 1953.

This work is planned as the first part of the second volume in the *Die Zahn-, Mund- und Kiefer- Heilkunde* series which is being edited by Karl Häupl, Wilhelm Meyer and Karl Schuchardt. The entire series, to consist of five volumes, each composed of numerous works, will be sold only in a complete set of volumes.

The purpose of this small part of the contemplated work is to give the dentist in brief summary an insight into pharmacological thought. The author attempts to set forth what he considers the minimum knowledge a dentist should possess of the harmful possibilities of the drugs he uses in his practice. He includes information on first aid treatment for dangerous effects of each drug.

The first four chapters present in some detail: (1) general pharmacology, (2) control of infections, (3) treatment of inflammation and wounds and (4) control of pain. The next four chapters deal briefly with regulation of breathing and circulation, the pharmacology of the vegetative system, bone building and defense against infection, and intoxication. The final chapter contains practical information on drug prescriptions.

As the author himself indicates, this work is not an exhaustive text but merely a useful summary for the dentist.

G. Nichols

PROCEEDINGS OF NATIONAL FOOD AND NUTRITION INSTITUTE

161 pages with illustrations. Price 65 cents. Washington, D. C., United States Department of Agriculture, 1953.

Although the material in this pamphlet was prepared in December 1952, the pamphlet is still an excellent source for a quick review of current knowledge of practical nutrition. It covers the nutritional health and food intake of individuals of all age levels in the United States, the relation of nutrition to disease, food laws and food protection and emergency (warfare) food planning.

Well-designed charts are provided. Pertinent references are included with each paper to facilitate further study. The style of the papers makes for easy reading.

A careful reading of this report makes it clear that although the United States may be proud that diets are improving, food practices are still poor for many persons. This is especially true for certain highly significant groups, such as children 6 to 15 years old (adolescent girls in particular), mothers of families, aged persons, women 30 to 70 years old and pregnant women.

This kind of information is important to dentists and can help them understand daily dental problems.

The report concludes with summaries of discussion groups on seven pertinent topics. The questions and statements outlined in this section will aid those who promote nutritional education of the public and should also stimulate many new research projects.

Dorothea F. Radusch

PATHOLOGY

By W. A. D. Anderson, M.D. Second edition. 1,393 pages with 1,241 illustrations and 10 color plates. Index. Price $16. St. Louis, C. V. Mosby Co., 1953.

A total of 32 outstanding pathologists have joined with the editor in the production of this sizable volume, apparently with the very laudable objective of compressing between its covers those essentials of the science which the beginner may hope to master. Two sizes of type are used, a larger face for the more important phases of the subject and a smaller size for material which, it is thought, will appeal to the more advanced students, pathologists and practicing physicians.

Very properly, such subjects as cells and their behavior, inflammation, degenerative changes and disturbances of circulation are treated in the earlier chapters. Prominence is given to the effects of radiation, tropical diseases, diseases of the skin, of the special sense organs, of the skeletal system and of the nervous system. Each chapter or section is followed by a generous bibliography of well chosen references. The illustrations are plentiful. Legends are appropriate and adequate. There is a very generous index.

The book is a highly desirable text for use in pathology courses. However, the reviewer wishes to raise one question; namely the large size and weight of this text. Isn't it likely that the very bulk of books that medical and dental students have to use is a frustrating experience which compels them to find a substitute in the comfort and convenience of the subject synopses? Is it too much to hope that a time will come when the 7 to 10 pound handbook or one volume text will be replaced by some satisfactory substitute of about half that size? In spite of size this will be a popular book.

Edward H. Hatton

THE MANAGEMENT OF PAIN

By John J. Bonica, M.D. 1,533 pages with 785 illustrations. Index. Price $20. Philadelphia, Lea & Febiger, 1953.

In contrast to books which have been written specifically on the subject of anesthesia, this excellent work covers the entire field of pain and the present concept of its alleviation, whether the pain is due to operative procedures, psychosomatic disturbances or organic disease. Its abundantly illustrated 1,533 pages are divided into three main parts.

Part I is devoted to a discussion of "Fundamental Considerations." This part includes chapters on the anatomic, neurophysiologic, physiopathologic and psychologic bases of pain, plus a chapter on the mental and physical effects of pain. This section contains a careful discussion of neuroanatomy, nerve distribution and the physiology of the nervous system.

The author emphasizes the dual aspect of pain: the perception of pain and the reaction to pain. He brings out the point that, while pain perception is a purely sensory phenomenon, pain reaction is a physiopsychologic phenomenon of considerable importance. In a discussion of the factors which influence the pain threshold, methods of measurement are suggested.

Part II is a generously illustrated, thorough description of the methods used in the management of pain. Specific nerve-blocking technics are presented, and a discussion of the physical and physiological problems of each procedure is always included. The illustrations of this portion of the text are especially well done. Both intraoral and extraoral blocks of the various divisions of the trigeminal and cervical nerves are, of course, included among the methods of pain management.

The chapter on methods of alleviation of pain by psychotherapeutic means is an important chapter, in which an effort is made to clarify the possible role of psychoneurosis in pain, both from the standpoint of etiology and treatment. Other chapters contain discussions of physical therapeutic methods, orthopedic methods, neurosurgical methods and roentgenotherapeutic methods of pain alleviation.

Part III, which is the largest portion of the book, is devoted to "Pain Syndromes." This subject includes the various types of neuralgia, pain due to peripheral vascular disease and pain associated with cancer and other neoplastic diseases. Of interest to everyone in dentistry, whether in general practice or in oral surgery, is the chapter on neuralgia of the face, head and neck. The author covers in careful detail not only the major types of neuralgia but also the so-called atypical type.

Although *The Management of Pain* is broad and inclusive enough to cover all branches of medicine, it will fit well into any dental library. Discussion of the problems concerning the face, mouth and jaws is well done, but of greater importance than this specific information is the well-rounded concept of pain every reader will obtain from the study of the book. The lasting impression one gets from this fine book is the importance of wide knowledge not only of the mechanics of nerve block but also of psychosomatics, physiology and organic disease.

Fred A. Henny

Current Literature

A CRITICAL REVIEW OF CLINICAL CEPHALOMETRIC RADIOGRAPHY

T. M. Graber. Am. J. Orthodont. 40:1 Jan. 1954.

Cephalometrics *per se* is not new. Ever since Camper's work on facial measurements in 1791, anthropologists have been interested in the ethnographic determination of facial form and pattern. Brodie and his associates published a cephalometric appraisal of orthodontic results in 1938. Cephalometrics is rightly a research tool.

Studies at Northwestern University have shown the wide range of combinations of cranial and facial components. To select one or two convenient measurements arbitrarily as prognostic or therapeutic clues is to overlook the interdependence of multiple individual characteristics which are unrecognizable in cross-sectional groupings of so-called normals. The goal in treatment must be an individualized norm; means and group standards should be used only as guides.

Many orthodontists now make routine use of cephalometrics in their case analyses. Landmarks and measure points are fairly well standardized and accurately reproducible. Cephalometrics is a valuable diagnostic tool to indicate the possibilities and limitations of therapy.

William F. Ford

ORTHODONTICS FROM THE PUBLIC HEALTH VIEWPOINT

Walter J. Pelton. Am. J. Orthodont. 40:27 Jan. 1954.

The Federal Government, through a number of programs sponsored by several different official agencies, is making some contributions to the development of orthodontic programs. Though the contributions may seem unrelated and not of great value, the development is evolutionary in that remedial programs of a limited nature are supported and that research, both intramural and extramural, is receiving some financial encouragement.

On the national level there are a number of opportunities for cooperation and leadership which no doubt will benefit the profession as well as the public. Several specific problems which might be undertaken by orthodontists or their official organizations are: first, encouragement in the reporting of cleft palate and cleft lip on birth supplement records in all states as a means of estimating the size of the problem and providing the mechanism to handle it; second, the experimentation with and the promotion of new approaches to handling the orthodontic needs of public beneficiaries; and finally, and perhaps most important, the active technical as well as financial support of dental research programs.

William F. Ford

ENDEMIC DENTAL FLUOROSIS IN KENYA: PRELIMINARY REPORT

M. M. Williamson. East African M. J. 30:217 June 1953.

The dental signs of fluorosis so far observed in the population of Kenya give sufficient proof to warrant a fuller inquiry and survey on the following lines: (1) to check and analyze regularly all domestic water supplies, (2) to survey and map in detail endemic areas, (3) to undertake rock analyses for correlation, (4) to correlate the caries incidence with dental fluorosis in East Africa, (5) to publicize the possible serious effects of fluorides from a public health point of view, (6) to take adequate steps to reduce domestic water supplies to concentrations of less than 1 ppm and (7) to investigate the possibility of skeletal changes in the indigenous population.

Analyses of water supplies are likely to show a high fluoride content. The geological structure of Kenya is such that one would expect high fluoride percentages. Large areas of the country are covered by formations due to comparatively recent volcanic action. The surface waters percolate through the soil, in many areas consisting of a high percentage of volcanic ash, and then pass through the weathered trachyte tuffs or lavas.

Over 4,500 children and adults were examined in different parts of Kenya for signs of the varying degrees of mottled enamel. The degrees of dental fluorosis were classified according to Dean. It is important to note that the teeth are affected only if the ingestion of the fluoride takes place during the time of enamel calcification, that is, up to the age of 8 years or to about 12 years if the third molars are to be included. Ingestion after this period has a cumulative effect on the skeletal structure.

The medical profession in Kenya should take an interest in the effects of chronic

fluoride intoxication. The following are indications of such intoxication: increased density of the bones, diminution of the medullary area, calcification of the ligamentous attachments, osteophytic growths, and exaggeration of the curvatures of certain of the long bones. Nearly 2,000 children with dental fluorosis were observed; the condition is endemic in Kenya and other parts of East Africa.

Abstract from J.A.M.A. 153:1128 Nov. 21, 1953

FOOTBALL'S OUNCE OF PREVENTION

J. F. Cathcart. J. Am. A. Health, Phys. Ed. & Recreation. Oct. 1953.

The probability of injury to football players is greater in high school than in college because there are more participants and because the players are at an age when they do not yet have full muscular coordination.

Over half of the injuries incurred in football are facial or dental. Almost all such injuries can be prevented by the use of a rubber mouth protector. The mouth protector of the preferred design fits over the upper teeth, the gingivae, the palate and, when the jaws are closed, over the lower teeth. The appliance should be of sufficient thickness to protect the lips from the teeth and the upper teeth from the lower teeth. The protector holds the jaws apart and serves as a shock absorber to prevent severe concussion or cerebral hemorrhage which might result from the upward displacement of the condyle into the articulating fossa.

A rubber mouth protector has been used for several years in 22 high schools in California and has resulted in the elimination of practically all injuries to the teeth, lips and jaws.

Most sporting goods dealers now supply this type of a rubber mouth protector. Its use during participation in football by an individual is of the utmost importance in the prevention of dental and facial injuries.

Roy L. Lindahl

A METHOD FOR CLOSURE OF OROANTRAL OPENINGS

DeOrr Cooley. J. Oral Surg. 12:28 Jan. 1954.

The following method for closure of small chronic oroantral openings was devised: Two parallel incisions are made adjacent to the opposing surfaces of the two teeth bordering the edentulous region which contains the defect. These incisions are continued palatally and terminated 6 to 8 mm. from the crest of the edentulous ridge. The terminal ends of these incisions are then joined by a horizontal incision.

The buccal extensions of the parallel incisions are continued upward along the buccal surface of the ridge as two 70 degree angle diverging incisions. The incisions are extended on either side for about 8 mm. and terminated as two short vertical incisions.

The flap is designed to include the full thickness of the mucoperiosteum along its base and over the ridge but only a portion, about 3 mm., of the thickness of the palatal tissue from which the remaining part of the flap is taken. This flap is gently raised and repositioned about 5 mm. buccally until the orifice of the oroantral opening lies over solid bone and away from the bony antral opening with which it formerly communicated. The margins of the orifice are then freshened and sutured. The repositioned flap is sutured and covered with a paste of zinc oxide and eugenol.

This procedure is adapted to small chronic oroantral openings located in large edentulous areas. The diameter of the oroantral orifice must be less than one fourth of the total width of the edentulous area involved. The operation should not be used at a site where a previously unsuccessful attempt at closure has been made.

SALIVARY CALCULI

John G. Whinery. J. Oral Surg. 12:43 Jan. 1954.

The symptoms of duct occlusion include gland distention and septic complication. Differential diagnosis from unilateral mumps, neoplasms and phleboliths must be made mainly on the basis of the patient's history. Bimanual palpation and roentgenographic examination also are used in diagnosis. To confirm the diagnosis and to locate the more common submaxillary calculi, the following roentgenograms are obtained routinely: (1) customary occlusal view, (2) occlusal view with the central roentgen ray projected from behind and through the gland and (3) true lateral view of the jaw with the floor of the mouth depressed by the patient's fingers pressing on the tongue. The reason for the routine taking of multiple roentgenograms is that several concrements may be present, any one of which might cause an obstruction.

Salivary calculi should be removed intraorally if possible; the glands themselves should be removed only as a last resort. Two technics of removal of these concrements are as follows: (1) The larger, palpable stones are localized with the index finger and held against the mandible, an incision is made directly over

the stone, and the stone is carefully lifted out. (2) For the smaller, more posterior and deeper stones, a fine metal probe may be inserted carefully into the duct. The duct then is laid open by cutting along the probe from the duct aperture as far posteriorly as necessary. If the probe is used as a guide, the subjacent lingual nerve will not be severed. After the excision of the stones, no suturing is necessary.

Asymptomatic intraglandular calculi should be left alone unless symptoms develop.

CYSTS OF THE INCISIVE CANAL WITH CONCREMENTS

Stanley A. Lovestedt and Karl W. Bruce. J. Oral Surg. 12:48 Jan. 1954.

Cysts of the incisive canal are of nondental origin, and their etiology can be explained on the basis of persistent epithelial remnants in the anterior palatine canal. Cysts of the incisive canal are relatively common, but those containing concrements are rare. The identification of intraluminary stones in the incisive region usually is dependent on roentgenographic evidence.

The use of occlusal and periapical roentgenograms with various tube angulations and knowledge of the anatomy of the region are of help in the diagnosis, for it is necessary in some instances to distinguish stones from retained root tips, the anterior nasal spine, and zones of increased density in the region of the incisive canal where a cyst may be located. In other instances, the stone may be superimposed over the junction of the hard palate and the nasal septum. Diagnosis then is difficult. A series of roentgenograms, covering a period of several years, often is one of the greatest helps in studying concrements.

In one case, a woman 43 years old had concrements in the lumen of a cyst in the incisive canal. The occurrence of concrements in a cyst of the incisive canal may possibly be explained on the basis of infection, stagnation or hypercholesterolemia.

CONGENITAL FISTULAS OF THE LOWER LIP; REPORT OF CASE

Kimble A. Traeger. J. Oral Surg. 12:69 Jan. 1954.

In a routine dental examination of a 20 year old Caucasian sailor, two large secreting pits were observed on the vermilion portion of the lower lip. The pits were symmetrically placed on either side of the midline and had tracts to a depth of about 1.5 cm. The patient stated that his mother, his maternal grandmother and other relatives had similar conditions.

A diagnosis of congenital fistulas of the lower lip was made. Healing after complete excision was uneventful.

This case is unusual because of the size of the fistulas and the cosmetic improvement brought about by simple excision.

OPEN REDUCTION OF MANDIBULAR FRACTURES

Robert B. Shira. J. Oral Surg. 12:95 April 1954.

The majority of mandibular fractures can be treated by simple methods of intermaxillary fixation. Open reduction should not be employed if any of the accepted methods of immobilization which do not require direct exposure of the bone will produce the desired results. When the simpler methods will not insure good results, the method of open reduction and direct fixation of the fragments affords the surgeon an excellent means of coping with complicated cases.

Indications for open reduction are: (1) fractures occurring at the angle of the mandible or distal to teeth with displacement of the proximal fragment; (2) fractures of an edentulous mandible; (3) fractures of the mandible when the maxilla is edentulous or when there are insufficient teeth to allow intermaxillary fixation; (4) fractures complicated by malunion or nonunion; (5) multiple fractures of the facial bones in which the maxilla is unsatisfactory as a fixation point and it is necessary to re-establish continuity of the mandible to make it available as a foundation for application of traction to other fragments; (6) loss of osseous structure necessitating bone grafts; (7) fractures in children, with a displacement that cannot be corrected by more conservative means.

Contraindications to this method are few: It should not be used if the fragments can be reduced and immobilized by simpler methods. It is contraindicated for comminuted fractures with multiple small fragments and for fractures of patients who are poor surgical risks. The external scarring may be objectionable to some patients.

The operative procedure usually is accomplished through a submandibular extraoral approach. Extreme care should be exercised to make the incision inconspicuous and to carry out the dissection in such a manner that injury to the mandibular branch of the facial nerve is avoided. By this approach direct visualization of the fragments is afforded, and

accurate repositioning is easily accomplished. Interosseous wiring or bone plates may be used to maintain the fragments in the desired position. When the fracture line is favorably situated, it may be reached through an intraoral approach, and fixation of the fragments can be accomplished by direct wiring. This procedure, usually carried out in an office, obviates the necessity of a major surgical procedure and eliminates any external scarring. With the advent of the antibiotics the fear of serious soft tissue and bone infections is no longer a deterring factor, and excellent results may be expected from the use of the intraoral approach.

In fixation of the fragments, after direct exposure, direct interosseous wiring is the method of choice; but on occasion metallic bone plates may be used. Horizontal pin fixation and extraoral skeletal fixation are alternate methods of treatment.

The direct fixation of fragments should not be relied on for complete fixation. Torque and strains will develop at the fracture line if unrestricted function of the mandible is permitted, and nonunion may result. Supplemental fixation is indicated and may be secured in various ways: (1) by intermaxillary wiring or elastic traction when teeth are present; (2) by elastic traction from a chin cup to a head appliance when a patient is edentulous—a Gunning type splint or the patient's dentures are used to maintain the fragments—; (3) by passing a Kirschner wire through the symphysis and fastening it to some head appliance.

Open reduction in treatment of mandibular fractures affords the surgeon a positive, sure, rapid and accurate method of reduction. Although there are several clear-cut indications for its use, the method should be employed only when accepted methods of intermaxillary fixation will not produce the desired results. Whatever the method used, it should insure adequate reduction and immobilization for sufficient time to allow bony consolidation of the fragments.

MANAGEMENT OF FRACTURES IN CHILDREN

Marvin G. Freid and Ernest Baden. J. Oral Surg. 12:129 April 1954.

Although the treatment of fractures of the mandible and the maxilla in children is essentially the same as the treatment of similar injuries in adults, there are special considerations necessary for the successful management of such fractures in the child patient.

The young patient is best handled in the hospital where a trained staff, proper facilities and the right atmosphere not only will make the child less apprehensive and therefore more cooperative but also will allow closer supervision of the treatment.

Special attention must be paid to the factors of growth of the jaws and the development of the teeth in the reduction and fixation of fractures of the mandible and the maxilla in the growing child.

The usual methods of reduction and fixation of fractures of the facial bones are used, including (1) intermaxillary elastics with Stout or other types of wiring, (2) prepared arches and intermaxillary elastics, (3) pin fixation and (4) open reduction.

Because of the various stages of the developing dentition, it has been found that orthodontic bands and appliances are most useful in the reduction of misplaced fragments and the fixation of the fractured bones. Acrylic splints also have been found of great value in the management of fractures in children.

If any discrepancies exist after treatment of fractures, they are more easily corrected with orthodontic appliances when the patients are children than when they are adults.

INDIVIDUALLY CONSTRUCTED STAINLESS STEEL BONE ONLAY SPLINT FOR IMMOBILIZATION OF PROXIMAL FRAGMENT IN FRACTURES OF THE ANGLE OF THE MANDIBLE

Arthur E. Smith and Marsh Robinson. J. Oral Surg. 12:170 April 1954.

Fractures at the mandibular angle often are difficult to immobilize after reduction because of muscle pull. An improved method, developed over a period of 17 years, is as follows:

From roentgenograms, the fracture is drawn on a model mandible. A splint design is outlined across the fracture on the model; it consists of: (1) a lateral tension bar between two screws, (2) a lower border "U" bar between two screws and (3) a connector bar or bars between the tension bar and the "U" bar. The design is transferred to a sheet of 0.027 inch, special 18-8 stainless steel plate, is cut out, finished and contoured to the model.

After open reduction, this individually designed and constructed splint is fixed to the mandible by means of four special type screws of the same metal. This metal is not brittle and permits final contouring during surgery. The metal causes a negligible tissue reaction and need not be removed after the healing of the fracture.

TOOTH MOBILITY. THE MEASURING METHOD. INITIAL AND SECONDARY TOOTH MOBILITY

Hans R. Muhlmann. J. Periodont. 25:22 Jan. 1954.

Two thousand tooth mobility measurements were made on seven rhesus monkeys of different ages under intravenous pentobarbital sodium anesthesia for the purpose of working out a more scientific method for quantitative evaluation of the degree of tooth mobility (TM). TM was measured with forces from 50 to 500 Gm., registered on a dial attached intraorally by rods and self-curing acrylics to the cuspids or posterior teeth. The monkeys were sacrificed and serial sections made. The widths of the labial and lingual periodontal spaces and lengths of roots were measured and compared with TM measurements.

The following observations were made: (1) Present results correspond to results in a previous report of 4,000 measurements of human TM. (2) TM measurements performed by application of short-lasting static forces to the crowns showed the existence of an initial and a secondary phase of TM. (3) Initial TM and secondary TM were found in single-rooted as well as multirooted teeth. (4) Erupting teeth had a greater initial mobility than erupted teeth. Initial TM was lower in well functioning teeth. (5) The histomorphological structures rather than the width of the periodontal membrane influenced the degree of initial TM.

Sumter Arnim

LOCAL ANESTHESIA IN DENTISTRY FOR CHILDREN—ITS PSYCHOLOGY AND TECHNIQUE

I. I. Beechen. J. Den. Children 20:138 4th quarter 1953.

It is essential that the following fundamental steps precede any operative treatment: (1) a visual examination of teeth, soft tissues, occlusion and general physical appearance, (2) a full-mouth roentgenographic survey and (3) an oral prophylaxis.

On the basis of the roentgenographic findings and visual observations, a plan of treatment is formulated. Sufficient operating time is planned to complete the work for a quadrant of the mouth at a time, since under proper guidance and anesthesia the child will relax and be comfortable for that length of time. An explanation of the proposed dental treatment is made to the child at his level of understanding.

The technic for the injection of the local anesthetic is as follows: The syringe is passed to the operator from behind the patient so that the operator will receive it with the level of the needle in the correct position for the injection and it will be concealed from the patient. The patient's head is stabilized against the headrest to prevent any sudden change of position. The position of the operator's hand for adequate stabilization of the patient's head depends on the region to be anesthetized.

The maxillary deciduous incisors, cuspids and molars are anesthetized by subperiosteal infiltration with the anesthetic solution. After a topical anesthetic has been applied, a buccal supraperiosteal injection is made into the loose connective tissue of the highest reflection of the vestibule. After one minute the needle is inserted into the white line that marks the junction of the attached and unattached gingival tissue and advanced beneath the periosteum about ¼ inch to the level of the apexes of the roots. About 1 cc. of solution is injected slowly.

Regional anesthesia for the maxillary anterior teeth may be obtained by injecting the nasopalatine canal. After a topical anesthetic is applied, the needle is inserted into the incisive papilla at a 45 degree angle, and a drop of solution is deposited. The syringe is then swung down to parallel the roots of the incisor teeth and advanced into the canal while the solution is injected in advance of the needle point.

The palate can be anesthetized by injecting the nasopalatine canal and the anterior palatine nerve at the posterior palatine foramen. If infiltration of the palatal side of the cuspid is indicated, it can be accomplished by passing the needle through the interproximal tissue between the cuspid and the first molar and expressing solution ahead of the needle until the blanching of the palatal tissue occurs. This same technic may be used to anesthetize the palatal gingiva of the incisor teeth.

The mandibular deciduous and permanent molars are anesthetized by the mandibular block technic, and the mandibular incisors are anesthetized by the subperiosteal infiltration of anesthetic solution as already described. The zygomatic block technic is used to anesthetize the maxillary permanent first molars by depositing solution near the posterior surface of the maxilla in the region of the posterior superior alveolar nerve.

William F. Via, Jr.

Deaths

Ackrill, Frank H., Providence, R. I.; Baltimore College of Dental Surgery, University of Maryland, 1914; died January 28; aged 68.

Addenbrooke, Helen L., Milwaukee; College of Dentistry, University of Iowa, 1895; died October 31; aged 87.

Arozian, Levon A., Detroit; College of Dental Surgery, University of Michigan, 1918; died December 5; aged 65.

Arrowood, Robert L., Temple, Texas; College of Dentistry, Baylor University, 1938; died January 1; aged 41.

Banks, Ethel Spencer, St. Petersburg, Fla.; Ohio College of Dental Surgery, University of Cincinnati, 1908; died October 5; aged 66.

Bell, J. Frank, Northampton, Pa.; Pennsylvania College of Dental Surgery, Philadelphia, 1905; died January 12; aged 73.

Bertucci, Joseph F., New Orleans; School of Dentistry, Tulane University, 1918; died January 18; aged 56.

Best, Bertram C., San Francisco; College of Physicians and Surgeons, San Francisco, 1904; died February 2; aged 84.

Bigler, Wayne H., St. Louis; St. Louis Dental College, 1907; died November 14; aged 67.

Bisbee, John B., Jr., Chatham, Mass.; Dental School, Tufts College, 1950; died December 29; aged 33.

Bowen, Margaret E., Frankfort, Ind.; Indiana Dental College, 1904; died January 12.

Boyd, Henry T., Sweetwater, Texas; School of Dentistry, Vanderbilt University, 1900; died January 18; aged 75.

Boyd, Ida M., Los Angeles; Dental School, Northwestern University, 1896; died February 20; aged 88.

Bradshaw, Robert C., Washington, D. C.; Baltimore College of Dental Surgery, 1891; died February 23, 1953; aged 85.

Brand, Lester W., Benton, Ill.; School of Dentistry, Vanderbilt University, 1897; died December 25; aged 80.

Braun, Louis, Detroit; College of Dental Surgery, University of Michigan, 1920; died January 19; aged 55.

Brawley, Robert E., Dayton, Ohio; College of Dentistry, Ohio State University, 1931; died February 4; aged 49.

Bridgforth, Sidney S., Crewe, Va.; School of Dentistry, Medical College of Virginia, 1929; died December 20.

Britt, Aylett T., Kansas City, Mo.; Kansas City Dental College, 1906; died January 8; aged 78.

Brooking, Frederick V., Macomb, Ill.; Baltimore College of Dental Surgery, 1888; died December 20; aged 88.

Brown, Walter E., St. Louis; Dental Department, Marion-Sims College of Medicine, 1897; died January 20; aged 81.

Brown, Young M., Newberry, S. C.; School of Dentistry, Vanderbilt University, 1913; died January 7; aged 65.

Burbank, John S., Brocton, Mass.; Dental School, Tufts College, 1900; died February 4; aged 73.

Burns, Elmer T., Somerville, Mass.; died January 31.

Burt, Charles P., Peoria, Ill.; College of Dentistry, University of Iowa, 1892; died January 27; aged 83.

Chute, Ernest H., Dedham, Mass.; Dental School, Harvard University, 1896; died January 19; aged 78.

Clark, Walter S., Burgettstown, Pa.; School of Dentistry, University of Pittsburgh, 1903; died November 5; aged 80.

Clewlow, Albert T., Halethorpe, Md.; Baltimore College of Dental Surgery, University of Maryland, 1937; died April 23, 1953; aged 50.

Collier, Carl C., McAlester, Okla.; Kansas City-Western Dental College, 1931; died in December; aged 48.

Corby, Arthur E., New York; School of Dentistry, University of Pennsylvania, 1917; died February 16; aged 66.

Cornell, Julius M., New York; Baltimore College of Dental Surgery, University of Maryland, 1909; died January 17; aged 74.

Crose, Reuben B., Elk City, Okla.; Dental School, Northwestern University, 1903; died October 25; aged 74.

Crowly, Arthur W., Ithaca, N. Y.; School of Dentistry, University of Pennsylvania, 1912; died December 26; aged 67.

Cullen, James B., St. Cloud, Minn.; College of Dentistry, Creighton University, 1916; died February 7; aged 63.

Cummings, Guy A., Ware, Mass.; School of Dentistry, University of Pennsylvania, 1901; died January 12; aged 78.

Danford, Samuel E., Omak, Wash.; died December 16; aged 59.

Davis, Paul H., Boise, Idaho; College of Dentistry, University of Minnesota, 1930; died January 5; aged 47.

Desoe, Roland E., St. Petersburg, Fla.; Dental School, Harvard University, 1906; died November 19; aged 67.

Doering, Livingston W., Croswell, Mich.; School of Dentistry, University of Pennsylvania, 1913; died November 12; aged 67.

Draffin, Ernest C., Columbia, S. C.; Southern Dental College, Atlanta, 1912; died December 30; aged 66.

Edelman, George L., Rochester, N. Y.; died February 2.

Elsner, Erwin C., St. Louis; School of Dentistry, Washington University, St. Louis, 1918; died January 14; aged 57.

Endlich, William M., Philadelphia; Medico-Chirurgical College of Philadelphia, 1913; died February 4; aged 65.

Englemann, Andrew U., What Cheer, Iowa; College of Dentistry, University of Iowa, 1908; died January 17; aged 69.

Enloe, John L., Kansas City, Mo.; Kansas City Dental College, 1902; died July 19.

Faherty, Harry R., St. Louis; School of Dentistry, Washington University, St. Louis, 1905; died December 15; aged 73.

Falkenburg, Ernest E., Flushing, N. Y.; College of Dentistry, New York University, 1927; died February 6; aged 50.

Ferlita, Stephen A., Atlanta, Ga.; Atlanta-Southern Dental College, 1925; died January 31; aged 55.

Ficken, Arthur R., Haubstadt, Ind.; Indiana Dental College, 1908; died January 16; aged 72.

Field, John J., Washington, D. C.; School of Dentistry, Georgetown University, 1921; died January 20; aged 59.

Fisher, Raymond H., Miami, Fla.; Southern Dental College, Atlanta, 1916; died August 17.

Fitch, Harry E., Elmira, N. Y.; Philadelphia Dental College, 1897; died November 30; aged 79.

Fogg, John M., Mount Airy, Pa.; School of Dentistry, University of Pennsylvania, 1891; died January 21; aged 80.

Freidinger, Russell E., Jericho Springs, Mo.; Kansas City Dental College, 1919; died November 22; aged 65.

French, Henry J., Denver; School of Dentistry, University of Denver, 1918; died January 2; aged 61.

Frey, Henry A., Chicago; College of Dentistry, University of Illinois, 1907; died October 15; aged 72.

Gelston, Irving, Brooklyn; School of Dentistry, University of Buffalo, 1918; died February 13; aged 63.

George, Clarke W., Fairfield, Iowa; College of Dentistry, University of Iowa, 1927; died January 5; aged 58.

Glass, Jack A., North Bergen, N. J.; New York College of Dentistry, 1924; died January 30; aged 50.

Glosman, David B., Detroit; died September 1; aged 83.

Goldstein, Abraham, Bronx, N. Y.; College of Dental and Oral Surgery, New York, 1919; died February 13; aged 59.

Gowdy, Henry L., Belmond, Iowa; Dental School, Northwestern University, 1905; died January 26; aged 76.

Graitcer, Samuel, Philadelphia; Medico-Chirurgical College of Philadelphia, 1908; died February 4; aged 69.

Gray, Morris H., University Heights, Ohio; College of Dentistry, Western Reserve University, 1922; died February 5; aged 52.

Grinstead, Virgil H., Norton, Kan.; Western Dental College, Kansas City, 1917; died January 11; aged 64.

Guthridge, Earl W., Oakland, Calif.; Department of Dentistry, Starling-Ohio Medical College, 1914; died February 20; aged 62.

Hagood, George F., Marietta, Ga.; Atlanta-Southern Dental College, 1933; died February 5; aged 46.

Hansen, William A., Dos Palos, Calif.; died January 17; aged 78.

Higgins, Harold W., Sioux City, Iowa; College of Dentistry, University of Iowa, 1927; died February 3; aged 51.

Holland, Daniel E., Philadelphia; died February 10; aged 62.

Hollister, John F., Birmingham, Ala.; College of Dental Surgery, University of Michigan, 1930; died January 14; aged 48.

Hoster, Willard W., Seneca Falls, N. Y.; School of Dentistry, Temple University, 1897; died January 28; aged 79.

Howard, Walter J., Lubbock, Texas; Kansas City-Western Dental College, 1925; died June 22.

Hughes, Ambrose I., Omaha; College of Dentistry, Creighton University, 1919; died January 19; aged 60.

Hunter, Roy A., Savannah, Ga.; Atlanta Dental College, 1916; died December 10; aged 57.

Iverson, Robert W., Moorhead, Minn.; College of Dentistry, University of Minnesota, 1953; died in October; aged 30.

Jackson, Terry W., Tullahoma, Tenn.; Louisville College of Dentistry of Centre College, 1903; died January 21; aged 76.

Johnston, Ernest A., Mobile, Ala.; Philadelphia Dental College, 1903; died December 17.

Jones, Norris C., Orlando, Fla.; Southern Dental College, Atlanta, 1916; died February 4; aged 62.

Jones, Seaborn P., Jacksonville, Fla.; Atlanta-Southern Dental College, 1919; died January 8; aged 58.

Joy, Hollis J., Newton, Iowa; College of Dentistry, University of Iowa, 1894; died January 30; aged 81.

Justice, Aubrey A., Lancaster, Mo.; Keokuk Dental College, 1905; died December 24.

Kellermann, Edward S., St. Paul; College of Dentistry, University of Minnesota, 1921; died January 23; aged 57.

Kelly, Jesse M., Ridgewood, N. Y.; Baltimore College of Dental Surgery, 1898; died February 6.

Kelly, John J., Chicago; Dental School, Northwestern University, 1904; died December 8; aged 70.

Keys, Alfred I., Birdsboro, Pa.; Pennsylvania College of Dental Surgery, 1900; died November 12; aged 76.

Knoderer, William H., Columbus, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1912; died January 27; aged 67.

Kowalski, John S., Chicago; Chicago College of Dental Surgery, Loyola University, 1940; died November 22.

Kravitt, Harold A., Brooklyn; died January 8.

Lang, Joseph, Chappaqua, N. Y.; Ohio College of Dental Surgery, University of Cincinnati, 1896; died January 22; aged 81.

Lartonoix, Earl H., St. Louis; School of Dentistry, St. Louis University, 1915; died January 5; aged 61.

Lewis, Clifford E., Shelton, Conn.; School of Dentistry, Temple University, 1908; died February 1; aged 70.

Lilliston, Howard D., Accomac, Va.; Baltimore College of Dental Surgery, 1900; died November 20; aged 77.

Lloyd, William L., Los Angeles; College of Dentistry, University of Pennsylvania, 1904; died December 25; aged 73.

Lodge, Edward B., Cleveland; College of Dental Surgery, University of Michigan, 1893; died February 16.

Lunz, Edward J., Milwaukee; Dental School, Marquette University, 1907; died January 27; aged 75.

MacAdam, Harvey, Worcester, Mass.; Pennsylvania College of Dental Surgery, 1894; died January 8; aged 79.

McCarthy, John J., Seattle; School of Dentistry, North Pacific College of Oregon, Portland, 1918; died November 22.

McCollum, Neal O., Kansas City, Mo.; Kansas City-Western Dental College, 1924; died October 16; aged 65.

McCue, William H., Westfield, Mass.; Dental School, Tufts College, 1917; died November 28; aged 59.

McElnea, Howard S., Montclair, N. J.; School of Dentistry, University of Pittsburgh, 1931; died January 2; aged 48.

McEvoy, Joseph M., Des Moines, Iowa; Chicago College of Dental Surgery, Loyola University, 1902; died September 14; aged 74.

Miller, George W., Schenectady, N. Y.; School of Dentistry, University of Buffalo, 1934; died October 22; aged 47.

Miner, J. Otis, New London, Conn.; Baltimore College of Dental Surgery, 1905; died December 29; aged 76.

Misner, Samuel E., Miami, Fla.; College of Dentistry, University of Tennessee, 1924; died December 25; aged 58.

Moore, Ward, Grand Rapids, Mich.; College of Dental Surgery, University of Michigan, 1901; died December 4; aged 77.

Morin, Alfred F., West Warwick, R. I.; Dental School, Tufts College, 1949; died January 9; aged 34.

Naff, Charles M., Olympia, Wash.; School of Dentistry, North Pacific College of Oregon, Portland, 1921; died November 8; aged 80.

Nieder, Elmer J., Cincinnati; Ohio College of Dental Surgery, University of Cincinnati, 1915; died January 3; aged 61.

Norton, Joseph P., Oak Park, Ill.; Chicago College of Dental Surgery, Loyola University, 1902; died December 13; aged 76.

Olson, Carl O., Rockton, Ill.; Chicago College of Dental Surgery, Loyola University, 1916; died December 3; aged 68.

Oswald, Eldred C., Seattle; College of Dentistry, University of Minnesota, 1916; died December 24; aged 60.

Palmer, Arthur T., Lynn, Mass.; Dental School, Tufts College, 1917; died November 23; aged 63.

Parks, Claude M., Winston-Salem, N. C.; Atlanta-Southern Dental College, 1923; died December 26; aged 53.

Parks, Marcus N., Washington, D. C.; Baltimore College of Dental Surgery, 1916; died December 6; aged 57.

Patterson, Nathan J., Albany, N. Y.; School of Dentistry, University of Pennsylvania, Philadelphia, 1916; died October 8.

Patterson, William M., Memphis, Tenn.; College of Dentistry, University of Tennessee, 1944; died November 20; aged 35.

Paul, J. Keith, Flint, Mich.; Department of Dental Surgery, Detroit College of Medicine, 1909; died November 14; aged 68.

Pitt, Charles S., Turlock, Calif.; College of Physicians and Surgeons, San Francisco, 1902; died November 18; aged 83.

Plum, Lealie B., Dayton, Ohio; Department of Dentistry, Starling-Ohio Medical College, 1911; died October 31; aged 69.

Price, Robert E., Newark, Del.; School of Dentistry, University of Pennsylvania, Philadelphia, 1916; died January 3; aged 65.

Pritchard, Donald J., Tacoma, Wash.; School of Dentistry, North Pacific College of Oregon, Portland, 1927; died December 12; aged 54.

Prussin, George, Brooklyn; College of Dental and Oral Surgery, New York, 1919; died December 5; aged 56.

Renne, William A., Pittsburgh; School of Dentistry, University of Pittsburgh, 1911; died November 30; aged 64.

Rennell, Harry J., Detroit; College of Dental Surgery, University of Michigan, 1919; died January 3; aged 55.

Riggs, William D., New York; Dental School, Harvard University, 1906; died December 11; aged 68.

Robbins, Samuel, New York; School of Dentistry, University of Pennsylvania, Philadelphia, 1922; died January 6; aged 54.

Ross, Alex C., Milroy, Ind.; Indiana Dental College, 1906; died December 10; aged 71.

Rothschild, Alfred, Salina, Kan.; died October 3; aged 80.

Rubin, Nathan L., Philadelphia; Pennsylvania College of Dental Surgery, Philadelphia, 1903; died November 27; aged 80.

Rumbel, William H., Richmond, Va.; School of Dentistry, University of Pittsburgh. 1923; died November 13; aged 52.

Rybak, James F., Cleveland; died December 29; aged 81.

Scharman, Edward C., Seattle; School of Dentistry, University of Colorado, 1918; died December 27; aged 65.

Schmidt, Julius G., Chicago; Dental School, Northwestern University, 1940; died January 22; aged 53.

Shoaf, Grover C., San Antonio, Texas; Baltimore College of Dental Surgery, 1905; died December 29; aged 69.

Shortridge, Maurice S., Sacramento, Calif.; College of Dentistry, University of California, 1928; died January 8; aged 48.

Sichel, Leo, San Francisco; College of Dentistry, University of California, 1895; died December 22; aged 80.

Sindeband, Irwin L., New York; College of Dentistry, University of Tennessee, 1923; died November 24; aged 54.

Skewes, William G., Waukesha, Wis.; Dental School, Marquette University, 1898; died December 18; aged 85.

Skolnik, Herman H., Peoria, Ill.; Chicago College of Dental Surgery, Loyola University, 1917; died December 15; aged 57.

Slogoff, Israel, Philadelphia; School of Dentistry, Temple University, 1933; died November 18; aged 42.

Smith, Howard F., South Hadley Falls, Mass.; Dental Department, Columbian University, 1901; died December 27; aged 80.

Smith, Raymond R., Depauw, Ind.; Pennsylvania College of Dental Surgery, Philadelphia, 1900; died December 21.

Spangenberg, Harry D., Brooklyn; School of Dentistry, University of Pennsylvania, 1902; died October 9; aged 72.

Sprague, Edward A., Boothbay Harbor, Maine; Philadelphia Dental College, 1899; died December 23; aged 77.

Squire, Winston E., Los Angeles; College of Dentistry, University of Southern California, 1925; died August 27; aged 53.

Stapleton, Clyde L., Loda, Ill.; Dental School, Northwestern University, 1901; died December 18; aged 76.

Steele, Tompkins H., Los Angeles; College of Dentistry, New York University, 1937; died November 26; aged 49.

Stentz, Francis L., Kalispell, Mont.; College of Dentistry, Western Reserve University, 1900; died November 21; aged 78.

Stoll, Victor, Far Rockaway, N. Y.; College of Dental and Oral Surgery, New York, 1917; died November 30; aged 71.

Stone, Reuben A., Chicago; College of Dentistry, University of Illinois, 1908; died December 31; aged 69.

Voyles, Ezra E., Indianapolis; Indiana Dental College, 1902; died January 5; aged 78.

Wall, Maurice E., Sherman Oaks, Calif.; Chicago College of Dental Surgery, Loyola University, 1931; died September 22.

Warner, George E., Murfreesboro, Tenn.; School of Dentistry, Vanderbilt University, 1924; died November 26; aged 59.

Weaver, Lowell T., Cincinnati; Cincinnati College of Dental Surgery, 1913; died November 25; aged 72.

Weiss, Oscar A., Minneapolis; College of Dentistry, University of Minnesota, 1893; died December 31; aged 89.

Westaby, Henry P., Columbus, N. C.; Dental School, Northwestern University, 1918; died December 1; aged 65.

Westcott, Albert C., Chicago; Dental School, Northwestern University, 1896; died December 7; aged 83.

Wilcox, Ivan E., Jackson, Mich.; College of Dental Surgery, University of Michigan, 1937; died November 18; aged 40.

Wood, John E., Fort Worth; died December 29; aged 49.

Woods, Frank R., Sebring, Fla.; College of Dental Surgery, University of Michigan, 1903; died November 17; aged 71.

Woods, Philip W., Takoma Park, Md.; College of Dental Surgery, University of Michigan, 1933; died December 10; aged 45.

Wright, Herman E., Seattle; College of Dental Surgery, University of Michigan, 1908; died November 10; aged 71.

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Dental Health: David W. Brock, Chm., 6026 Enright Ave., St. Louis
W. Philip Phair, Secy., 222 E. Superior St., Chicago

Dental Research: M. K. Hine, Chm., 1121 W. Michigan St., Indianapolis
H. Trendley Dean, Secy., 222 E. Superior St., Chicago

Dental Therapeutics: Thomas J. Hill, Chm., 2085 Adelbert Road, Cleveland
J. Roy Doty, Secy., 222 E. Superior St., Chicago

Dental Trade and Laboratory Relations: F. W. Herbine, Chm., 230 N. Fifth St., Reading, Pa.
Bernard J. Conway, Secy., 222 E. Superior St., Chicago

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Announcements

MEETINGS OF THE AMERICAN DENTAL ASSOCIATION

Ninety-Fifth Annual Session	Nov. 8-11, 1954	Miami, Fla.
Ninety-Sixth Annual Session	Oct. 17-20, 1955	San Francisco
Ninety-Seventh Annual Session	Oct. 1-4, 1956	Atlantic City, N.J.

MEETINGS OF CONSTITUENT SOCIETIES

State	Date	Place	Secretary	Address
Alabama			F. A. Finney, Jr.	1045 Forrest Ave., Gadsden
Alaska	Aug. 2-5	Anchorage	C. J. Pearson	500 K St., Anchorage
Arizona			E. M. Scott	17 E. Weldon Ave., Phoenix
Arkansas			D. M. Hamm	Box 89, Clarksville
California			L. R. Ludwigsen	450 Sutter St., San Francisco
S. California	May 3-5	Los Angeles	J. P. Bowers	124 W. Lime Ave., Monrovia
Colorado	Oct. 3-6	Colorado Springs	W. R. Humphrey	724 Republic Bldg., Denver
Connecticut	June 2-4	Hartford	E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware	Dec. 8	Wilmington	R. J. Zurkow	152 S. State St., Dover
District of Columbia	June 8	Washington	Z. B. Lloyd	2007 R St., N. W., Washington
Florida			B. S. Carroll	706 Professional Bldg., Jacksonville
Georgia	Oct. 10-13	Atlanta	J. W. Yarbrough	Bibb Bldg., Macon
Hawaii	June 23-26	Honolulu	J. H. Dawe	810 N. Vineyard St., Honolulu
Idaho			C. G. Hanson	409 11th Ave., S., Nampa
Illinois	May 10-13	Springfield	P. W. Clopper	623 Jefferson Bldg., Peoria
Indiana	May 17-19	Indianapolis	E. E. Ewbank	Box 96, Kingman
Iowa	May 3-5	Des Moines	H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas	May 16-19	Wichita	F. A. Richmond	861 Brotherhood Bldg., Kansas City
Kentucky			A. B. Coxwell, Jr.	1976 Douglass Blvd., Louisville
Louisiana			J. S. Bernhard	2415 Line Ave., Shreveport
Maine	June 24-26	Rockland	S. M. Gower	Box 27, Skowhegan
Maryland	May 3-5	Baltimore	E. L. Pessagno, Jr.	415 Medical Arts Bldg., Baltimore
Massachusetts	May 2-5	Boston	H. E. Tingley	12 Bay State Road, Boston
Michigan			F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota			C. V. E. Cassel	242 Lowry Medical Arts Bldg., St. Paul
Mississippi	June 7-9	Biloxi	B. A. Cohen	306 Plaza Bldg., Jackson
Missouri	June 13-16	St. Louis	E. D. Suggett	201 Merchants Bank Bldg., Jefferson City
Montana	May 6-8	Great Falls	E.G. Vedova	Roundup
Nebraska	May 10-12	Omaha	F. A. Pierson	1112 Federal Securities Bldg., Lincoln
Nevada	June 18-20	Lake Tahoe	O. M. Seifert	506 Humboldt St., Reno
New Hampshire	June 13-15	Whitefield	F. E. Williams	814 Elm St., Manchester
New Jersey	May 4-6	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico	May 23-26	Santa Fe	J. S. Eilar	Medical Arts Square, Albuquerque
New York	May 10-12	Buffalo	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	May 16-19	Pinehurst	R. D. Coffey	Kibler Bldg., Morganton
North Dakota	May 23-25	Bismarck	V. B. Keltgen	517 de Lendrecie Bldg., Fargo
Ohio	Oct. 17-20	Cincinnati	E. G. Jones	185 E. State St., Columbus
Oklahoma			D. Robertson	434 N.W. 13th St., OklahomaCity
Oregon			W. H. Hurley	308 Selling Bldg., Portland
Panama Canal Zone	May 6	Colon	A. L. Teitel	Box D, U.S. Naval Station, Rodman
Pennsylvania	Oct. 4-6	Pittsburgh	M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			L. de Jesus	Box 624, San Juan
Rhode Island	Jan. 1955	Providence	B. C. Friedman	2 Ayrault St., Newport
South Carolina	May 23-25	Columbia	J. R. Owings	7 Medical Court, Greenville
South Dakota	May 20-22	Sioux Falls	L. N. Thelen	310A W. 18th St., Sioux Falls
Tennessee	May 10-12	Chattanooga	W. L. McCulley	Brown Bldg., Cleveland
Texas			W. Ogle	3607 Gaston Ave., Dallas

State	Date	Place	Secretary	Address
Utah			K. L. Dedekind	914 Medical Arts Bldg., Salt Lake City
Vermont	May 16-18	Woodstock	W. J. Reardon	18 Madison St., Rutland
Virginia			W. T. McAfee	705 Colonial National Bank Bldg., Roanoke
Washington			W. B. Martin	Medical-Dental Bldg., Seattle
West Virginia	July 25-28	White Sulphur Springs	G. N. Casto, Jr.	710½ Lee St., Charleston
Wisconsin			R. A. Mason	964 N. 27th St., Milwaukee
Wyoming	June 20-23	Rock Springs	T. J. Drew	State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 21-24*†	Birmingham	W. L. McCarty	200 Professional Center, Montgomery
Alaska			R. H. Williams	Box 2122, Juneau
Arizona	June 21-26*†	Florence	R. K. Trueblood	107 East A Ave., Glendale
Arkansas	June 21-25*†	Little Rock	H. O. Weatherly	205 Halter Bldg., Conway
California	June 21	Los Angeles	K. I. Nesbitt	507 Polk St., San Francisco
	July 26	San Francisco		
Colorado	June 21-25	Denver	J. M. Peabody	724 Republic Bldg., Denver
Connecticut	June 14-19*†	Bridgeport	C. G. Brooks	302 State St., New London
Delaware	June 28-30*†	Wilmington	P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. T. Birthright	Suite 718, 1835 Eye St., N.W., Washington
Florida	July 12-22*†	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Georgia			S. H. Yarbrough	12 Medical Arts Bldg., Columbus
Hawaii			H. L. Houvener	427 Dillingham Bldg., Honolulu
Idaho	June 28-30	Boise	R. E. Blickenstaff	1023 Fourth St., S., Nampa
Illinois			W. A. McKee	503 Wood Bldg., Benton
Indiana	June 15-18*†	Indianapolis	C. A. Frech	504 Broadway, Gary
Iowa	May 24-28*†	Iowa City	D. J. FitzGerald	615 Brick & Tile Bldg., Mason City
Kansas	June 14-17	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Kentucky	June 7-10	Louisville	R. M. Justice	1330 Central Ave., Ashland
Louisiana	June 6-10	New Orleans	R. C. Steib	833 Maison Blanche Bldg., New Orleans
Maine	June 28-30	Boston	R. A. Derbyshire	Box 387, Skowhegan
Maryland	June 7-9‡		H. Levin	3429 Park Heights Ave., Baltimore
Massachusetts	June 21-25*‡		G. J. Fink	Rm. 33, State House, Boston
	June 23-25†‡			
Michigan	June 6-12	Ann Arbor	J. L. Champagne	3714 W. McNichols Road, Detroit
Minnesota	June 14-18	Minneapolis	M. G. Walls	1470 Lowry Medical Arts Bldg., St. Paul
Mississippi	June 15-17	Jackson	J. C. Boswell	508 Lamar Life Bldg., Jackson
Missouri	June 7-12	St. Louis Kansas City	R. R. Rhoades	414 Central Trust Bldg., Jefferson City
Montana	July 12-16	Helena	V. J. Quinn	301 Phoenix Bldg., Butte
Nebraska	June 7-11	Lincoln	H. E. Weber	1210 Federal Securities Bldg., Lincoln
Nevada	June 21	Reno	R. Whitehead	Suite 6, Masonic Temple, Reno
New Hampshire	June 18, 19	Boston	S. G. Markos	8 Renaud Ave., Dover
New Jersey	June 2-4*	Trenton	W. A. Wilson	150 E. State St., Trenton
	June 7, 8*	Philadelphia		
	June 14, 15*	New York		
	June 23, 24†	New York		
New Mexico	June 21-24	Santa Fe	J. J. Clarke, Sr.	Artesia
New York	June 24, 25*‡		D. W. Beier	23 S. Pearl St., Albany
	June 29-July 2*‡			
	June 24, 25†‡			
	June 29, 30†‡			
North Carolina	June 28-July 2	Chapel Hill	F. O. Alford	1109 Liberty Life Bldg., Charlotte
North Dakota	July 12-16	Fargo	A. L. Pushor	Lisbon
Ohio	June 17-19	Columbus	H. B. Smith	322 E. State St., Columbus
	June 21-23			
Oklahoma	June 28-30		R. P. Keidel	403 Surety Bldg., Muskogee
Oregon	June 14-17	Portland	F. L. Utter	506 Pioneer Trust Bldg., Salem
Pennsylvania	June 22-27*†	Philadelphia	A. M. Stinson	Dept. of Public Instruction, Box 911, Harrisburg
Puerto Rico			J. Mercado C.	Box 3717, Santurce

State	Date	Place	Secretary	Address
Rhode Island			F. M. Hackett	267 Academy Ave., Providence
South Carolina	June 17-19	Columbia	T. C. Sparks	1315 Pickens St., Columbia
South Dakota	June 20-23	Sioux Falls	H. T. Aker	Canton
Tennessee	June 14-18	Memphis	F. S. Maxey	804 Bennie Dillon Bldg., Nashville
Texas	June 13-19* June 17-19†	Dallas	R. T. Weber	312 Capital National Bank Bldg., Austin
Utah	June 8-July 3‡		N. E. Munk	201 Cache Valley Bank Bldg., Logan
Vermont	June 28-30	Burlington	P. M. Fitch	Newport
Virginia	June 7-12* June 7, 8†	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond
Washington			M. L. Mower	National Bank of Commerce Bldg., Olympia
West Virginia	June 21-23*†	West Liberty	C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin	June 14-18*†	Milwaukee	S. F. Donovan	Tomah
Wyoming			W. A. Hocker	212 O & S Bldg., Casper

*Dental examination. †Dental hygiene examination. ‡Write to secretary of dental examining board for information on locations of examinations. §Approximate dates—verify with state dental examining board.

MEETINGS OF OTHER ORGANIZATIONS

Name	Date	Place	Secy. or Chm.	Address
American Academy of Dental Medicine	May 14-16	Philadelphia	W. M. Greenhut Secy.	124 E. 84th St., New York
American Association of Orthodontists	May 16-20	Chicago	F. A. Squires Secy.	Medical Centre, White Plains, N. Y.
American Board of Oral Surgery	May 8-10	Chicago	L. M. FitzGerald Secy.	718 Roshek Bldg., Dubuque, Iowa
American Board of Orthodontics	May 11-15	Chicago	C. E. Martinek Secy.	661 Fisher Bldg., Detroit
American Dental Society of Europe	July 6-9	Paris, France	J. P. Molony Hon. Secy.	110 Harley St., London W.1, England
American Public Health Association	Oct. 11-15	Buffalo	R. M. Atwater Exec. Secy.	1790 Broadway, New York
American Society of Oral Surgeons	Nov. 3-6	Hollywood, Fla.	R. F. Whalen Exec. Secy.	1112 E. Clay St., Richomnd, Va.
Ark-La-Tex Dental Congress	Aug. 16	Shreveport, La.	M. Monsour Chm.	Medical Arts Bldg., Shreveport, La.
British Dental Association	May 10-14	Blackpool, England	H. P. Buchanan Secy.	13 Hill St., Berkeley Square, London W.1, England
Chicago Dental Society	Feb. 6-9 1955	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago
Council on Dental Education, Dental Aptitude Tests			S. Peterson Secy.	222 E. Superior St., Chicago
Federation Dentaire Internationale	June 8-13	Scheveningen, The Hague, Holland	G. H. Leatherman Secy. Gen.	35, Devonshire Place, London W.1, England
Fifth Annual Berkshire Conference	June 20-24	Falmouth, Mass.	I. Glickman	Tufts College Dental School, 136 Harrison Ave., Boston
Great Lakes Society of Oral Surgeons	May 1, 2	Toronto, Can.	B. B. Cook Secy.	10314 Puritan Ave., Detroit
Italian Congress of Dentistry and Stomatology, Twenty-ninth Congress	Sept. 13-18	Venice, Italy	U. Saraval Dir.	Campo Manin 4017, Venice, Italy
National Board of Dental Examiners	Dec. 6, 7		G. J. Casey Secy.	222 E. Superior St., Chicago
New England Dental Society	Oct. 20, 21	Boston	F. L. Finley, Jr. Secy.	43 Farmington Ave., Hartford, Conn.
Ninth Pacific Coast Dental Conference	June 1-5	Banff, Alberta, Can.	H. B. Powell Secy.	Greyhound Bldg., Calgary, Alberta, Can.
Pacific Coast Society of Prosthodontists	May 29, 30	Seattle	A. W. Spaulding Secy.	4350 Eleventh Ave., Los Angeles
Seventh New Orleans Dental Conference	Oct. 24-27	New Orleans	V. B. Marquer Secy.	2213 S. Carrollton Ave., New Orleans
Southern Society of Orthodontists	Oct. 31-Nov.3	Washington, D.C.	M. D. Edwards Secy.	132 Adams Ave., Montgomery, Ala.
Southwestern Society of Orthodontists	Oct. 10-13	Oklahoma City	F. A. Boyd Secy.	1502 N. Third St., Abilene, Texas

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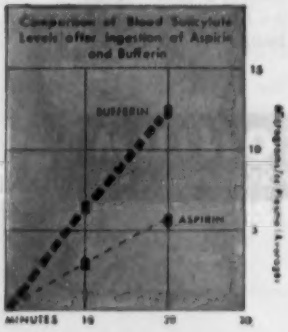

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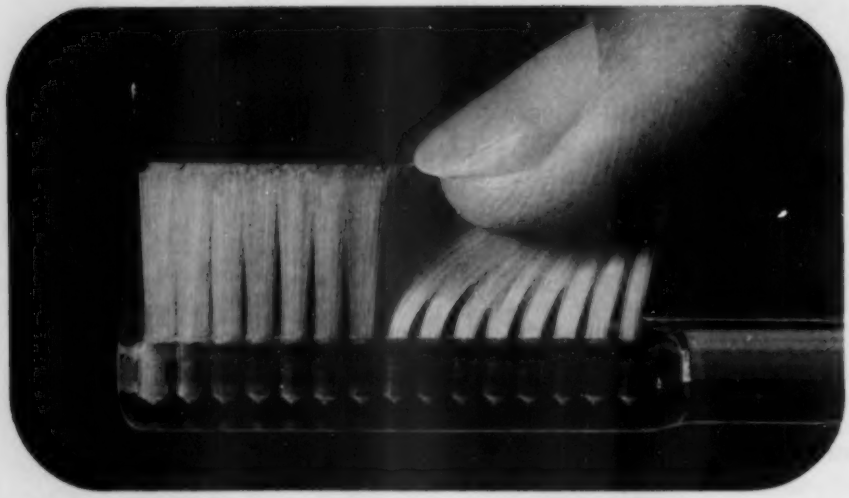

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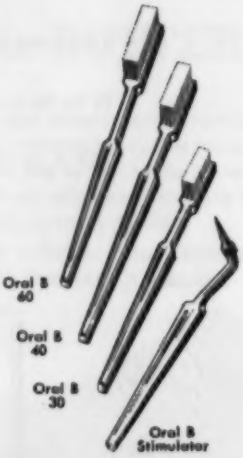
If you wish a complimentary brush, please mail a request on your professional letterhead.



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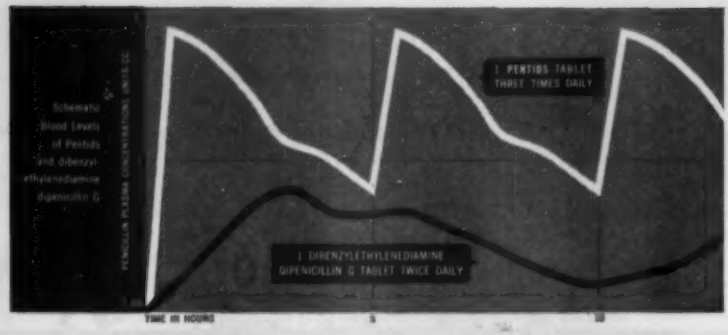

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Hotel reservation application

95th Annual Session
American Dental Association
Nov. 8-11, 1954
Miami, Florida

INSTRUCTIONS: Reservations for hotel accommodations may be secured for either Miami or Miami Beach by completing this application and mailing it to: A.D.A. Housing Bureau, 320 N.E. Fifth Street, Miami, Florida.

Be sure to indicate your arrival time in Miami. Reservations will be held only until 6 p.m. of the day you indicate for your arrival in Miami. Failure to notify the hotel of any last minute change in your arrival time may result in cancellation of the reservation.

Names of all persons who intend to occupy the accommodations must be listed on the application.

List four choices of hotels. Confirmation will be sent to the applicant indicating which hotel has accepted the reservation.

Write the A.D.A. Housing Bureau in Miami if you wish to cancel the reservation.

A.D.A. Housing Bureau • 320 N.E. Fifth Street, Miami, Florida

(Please print or type) A.D.A.

Applicant:

Name_____

_____
(Street address) (City) (Zone) (State)

Arrival in Miami_____ a.m. p.m. Leaving_____

Accommodations:

Hotel_____ (First choice) Hotel_____ (Third choice)

Hotel_____ (Second choice) Hotel_____ (Fourth choice)

☐ Single occupancy, rate to range from $____ to $____ per day.
☐ Double occupancy, double bed, rate to range from $____ to $____ per day. } 2 names must be listed below
☐ Double occupancy, twin beds, rate to range from $____ to $____ per day. }
☐ Suite of____ rooms, including parlor, rate to range from $____ to $____ per day.

Occupants: (use an extra page for listing additional names if necessary)
Room will be occupied by:

_____
(Name) (Address) (City) (State)

_____
(Name) (Address) (City) (State)

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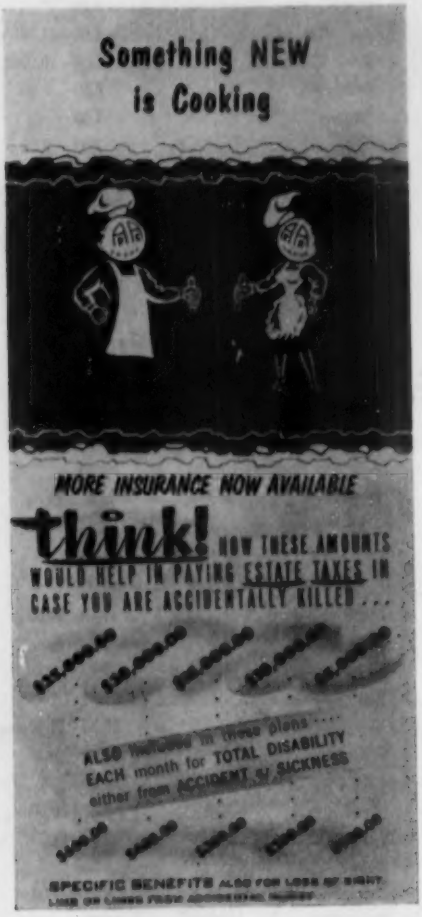
Hotels in **MIAMI**

Key no.	Hotel	Single	Double
2	Alcazar	$5.00	$6.00-$ 7.00
11	Alhambra		7.00
9	Belfort	5.00	6.00- 7.00
16	Berni		5.00- 7.00
5	Biscayne Terrace	8.00	10.00- 14.00
7	Columbus	6.00- 7.00	8.00- 12.00
8	Cortez	4.00	5.00- 7.00
12	Dallas Park		10.00
10	El Comodoro	5.00- 6.00	8.00- 12.00
15	Everglades	5.00- 8.00	8.00- 12.00
17	Leamington		6.00- 7.00
3	Liberty		6.00
18	McAllister	5.00- 7.00	8.00- 12.00
6	Miami Colonial	5.00- 6.00	8.00- 10.00
19	Paramount		6.00- 8.00
21	Patricia	5.00	7.00
4	Plaza	5.00	7.00- 8.00
20	Ponce de Leon	8.00	10.00- 12.00
14	Robert Clay	5.00- 6.00	5.00- 7.00
22	Towers	4.00	6.00
13	Tuttle		6.00
1	Venetian	5.00- 6.00	6.00- 8.00

Hotels in **MIAMI BEACH**

Key no.	Hotel	Single	Double
7	Atlantic Towers	$ 7.00	$ 9.00-$
21	Atlantis	5.00	6.00
22	Belmar	8.00	10.00- 12.00
20	Billows		6.00
9	Cadillac		6.00- 8.00
43	Capri	6.00	8.00
11	Caribbean	6.00	8.00
50	Catalina		5.00- 6.00
40	Claridge	3.00	5.00
37	Continental	4.00	5.00
27	Cromwell	6.00	8.00
38	Croydon Arms	5.00	6.00
45	Del Prado	5.00	6.00- 8.00
53	Delano		10.00
56	di Lido		10.00- 14.00
47	Dorchester	4.00	5.00
41	El Morocco	5.00	8.00
44	Embassy	6.00	8.00
4	Empress		10.00- 14.00
51	Gale	4.00	5.00
5	Good	4.00- 6.00	7.00- 11.00
8	Lord Tarleton	10.00	12.00
49	Maxine		6.00
1	Monte Carlo	8.00-12.00	9.00- 13.00
54	National		6.00
30	Nautilus		15.00
12	Ocean Grande	4.00	5.00- 7.00
13	Patrician	5.00	6.00
10	President Madison	$7.00	$8.00
23	Promenade	8.00	10.00- 12.00
42	Rendale	4.00	5.00
32	Richmond	5.00	6.00
16	Robert Richter	6.00	8.00
25	Roney Plaza		10.00- 14.00
55	Sagamore		8.00
52	San Juan	5.00	6.00
6	San Marino	8.00	10.00
18	Sans Souci		10.00- 14.00
17	Saxony		12.00
34	Seacomber		10.00
26	Sea Gull		8.00- 10.00
31	Shelbourne	8.00	10.00- 12.00
48	Shelby	4.00	5.00
29	Shore Club		8.00- 12.00
14	Shoremede	8.00	10.00
2	Sorrento	8.00	10.00
33	South Seas	5.00	6.00
3	Sovereign		10.00
35	Surfcomber	8.00	10.00
36	Surrey		8.00
46	Town House		6.00
24	Traymore	5.00- 8.00	6.00- 10.00
19	Triton	4.00	6.00- 8.00
28	Vanderbilt	6.00	8.00
15	Versailles		8.00- 12.00
39	Wiltshire		4.00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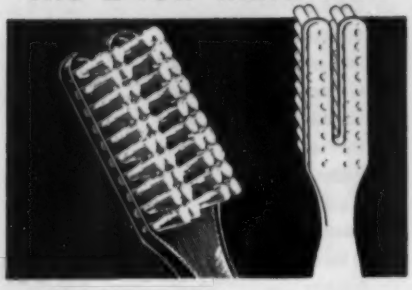

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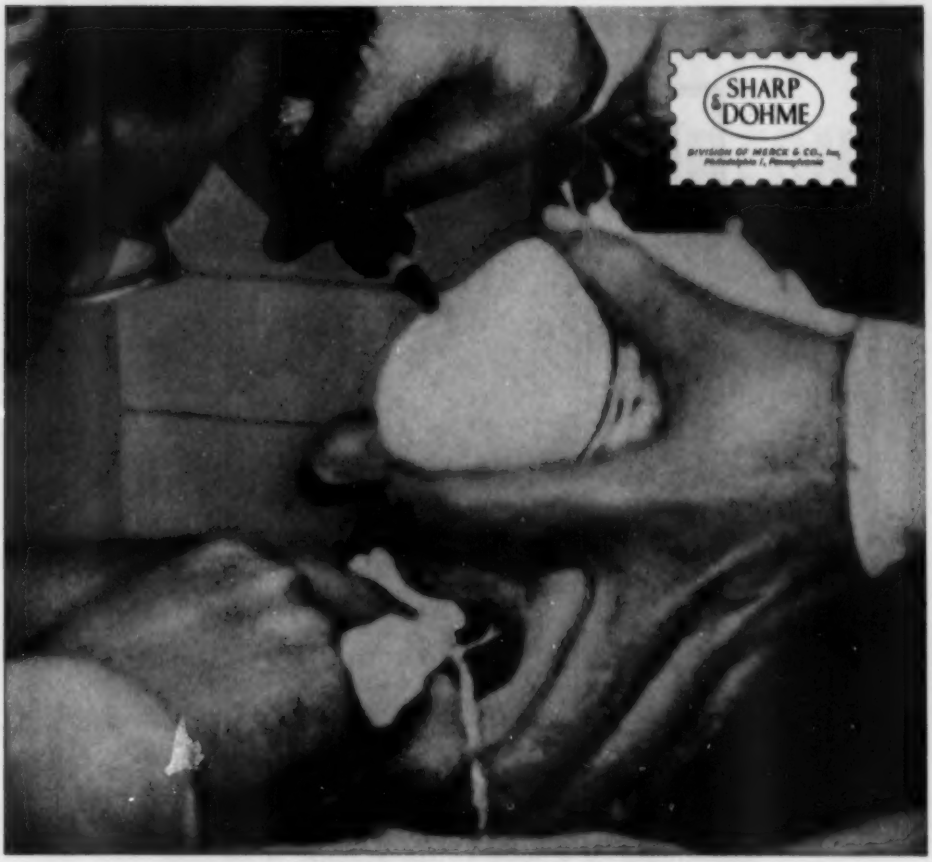

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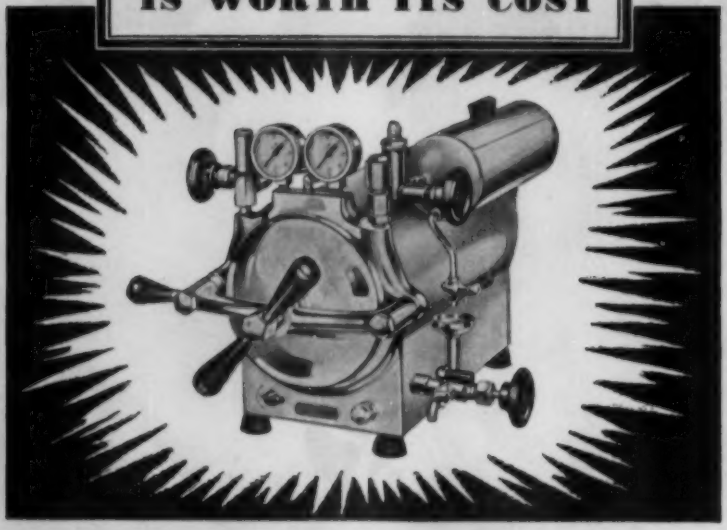

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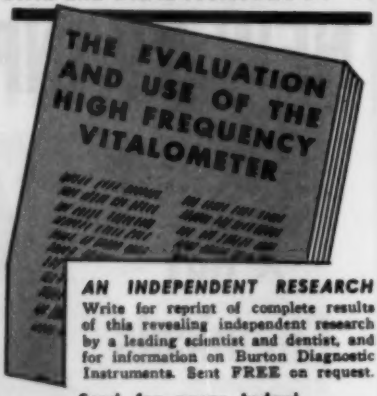

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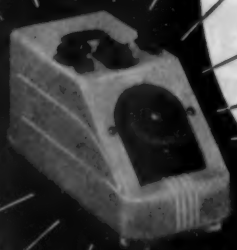

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Have us modernize your old Model 3A Wig-l-bug. We check and clean thoroughly. We replace the mechanical timer with a new electric timer. We completely overhaul the motor, supply new wires where required. And we remount the mechanism in a beautiful, bright, white bakelite housing. This offer only to 110 volt, 60 cycle machines . . . Costs only $27.50, F.O.B. Factory.

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Write for samples and 14-page clinical report.[1]

(1) Lewison, E. F. Archives of Surgery, May 1950. Vol. 60, pp. 865-878.

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GEORGIA—For rent. Office with three fully equipped units. Practice of recently deceased dentist. Excellent location in Marietta, Ga. Direct replies to Trust Co. of Georgia, Trust Dept., Atlanta, Ga.

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ILLINOIS—For sale. Perma-stone bungalow dental office building, fully equipped, including General Electric x-ray, new S. S. White unit and motor chair. Well-established practice, serving large rural area. Office and practice must be seen to be appreciated. Moving to Florida. Direct replies to Dr. A. Deo Klein, Onarga, Ill.

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ILLINOIS—For sale. Active practice and/or full equipment, including G. E. x-ray, Ritter unit and motor chair. Excellent farming community in central Illinois. Good fee scale. Closing practice to specialize. Address A.D.A. Box No. 628.

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INDIANA—For rent, established two-chair office. Equipment for sale. Terms if desired. Office rent $102.00 per month. Excellent for newly licensed dentist with little cash. Direct replies to Mrs. Ernest Telfer, 519 S. 9th St., Vincennes, Ind.

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IOWA—Reasonable rent. Fully equipped, modern, one-chair office downtown. Excellent opportunity for man desiring well-established general practice of 26 years. Available because of recent death. Address Mrs. Harold Higgins, 841 Frances Bldg., Sioux City, Iowa.

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IOWA—For sale. Modern one-chair office in downtown Waterloo. New jade green Ritter equipment. Leaving to specialize. Patient list furnished. Address A.D.A. Box No. 657.

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SOUTH DAKOTA—Wanted dentist to locate in small western South Dakota town with a large trade territory. Office space available. Town is an active tourist center. For further information contact O. S. Soma, President, Wall Chamber of Commerce, Wall, S. D.

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CALIFORNIA—Dentist, 1951 graduate, general internship one year, completing Navy service in August, California license. Desires association, rental or may consider purchasing practice. Excellent references. Address A.D.A. Box No. 644.

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CALIFORNIA-NEW MEXICO—Dentist, age 35, veteran of World War II and Korean conflict; internship and 24 months' oral surgery. Interested in association or purchase of practice in oral surgery. Have California and New Mexico State Boards. Address A.D.A. Box No. 643.

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FLORIDA—Dentist, Florida license, completing Air Force service in July, desires permanent practice or association in south Florida area with permanent practitioner. 1952 graduate Marquette University. One year rotating internship Percy Jones Army Hospital. Address A.D.A. Box No. 645.

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IOWA-ILLINOIS—Navy veteran World War II and Korea, desires location. Will buy a going practice or will establish self in community needing dentists. Prefer town 10,000 to 75,000. Ten years' experience. Iowa and Illinois licenses. Address A.D.A. Box No. 646.

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KENTUCKY—Dentist, 7 years' general practice, training, experience oral surgery, general anesthesia. Desires location or association with oral surgeon or general practitioner. Kentucky license, take Boards. Release from service in June. Address A.D.A. Box No. 647.

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KENTUCKY-NEW YORK—Oral surgeon, age 26, completing training period June 1954. Three years' general practice USAF; year graduate training; 2 years' hospital residency, New York, Kentucky licenses. Seeks association or location. Address A.D.A. Box No. 615.

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LOUISIANA—Teaching career desired. D.D.S. May 1950. Military obligations completed. Married, age 35. Presently engaged in successful private practice. Louisiana license and National Board. Address A.D.A. Box No. 648.

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NEW YORK—Dentist, New York state licensed, 30 years ethical general practice and past teaching experience. 53 years old. Desires association with university in teaching capacity, or any public or private organization where my knowledge and experience can be employed. Can relocate anywhere. Address A.D.A. Box No. 649.

NEW YORK—Dentist, 32 years old, 1946 graduate, internship, one year oral surgery training, 4 years' general practice, 2 years' military service, teaching experience. Mature, capable, hard-working. Seeks position with future anywhere in New York state. Address A.D.A. Box No. 651.

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NEW YORK-NEW JERSEY-CONNECTICUT—Orthodontist, university trained, completing Army service in May, desires opportunity to associate or purchase orthodontic practice. Dental graduation 1946. Licensed New York, New Jersey and Connecticut. Address A.D.A. Box No. 650.

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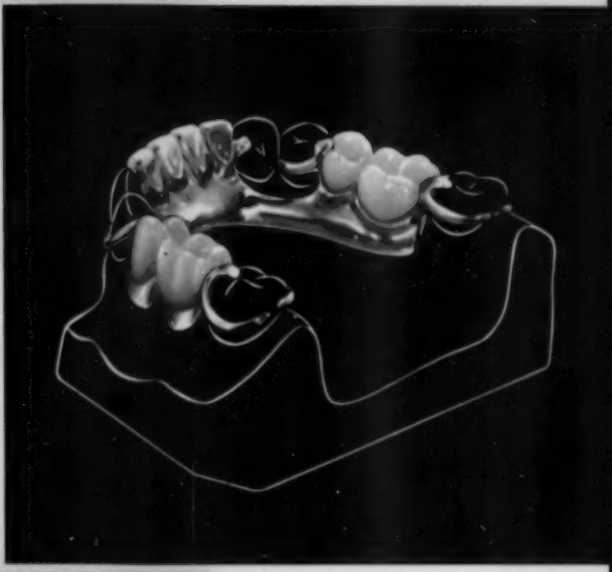

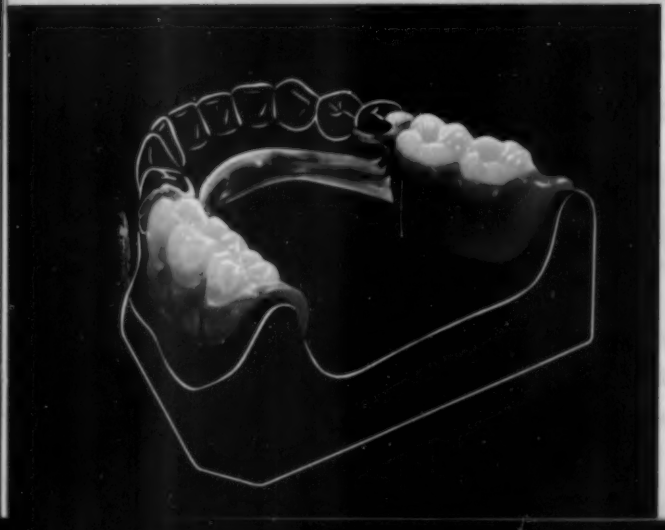

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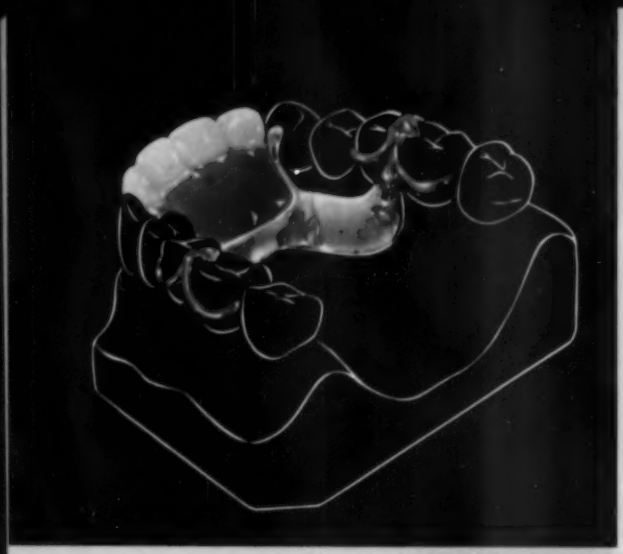

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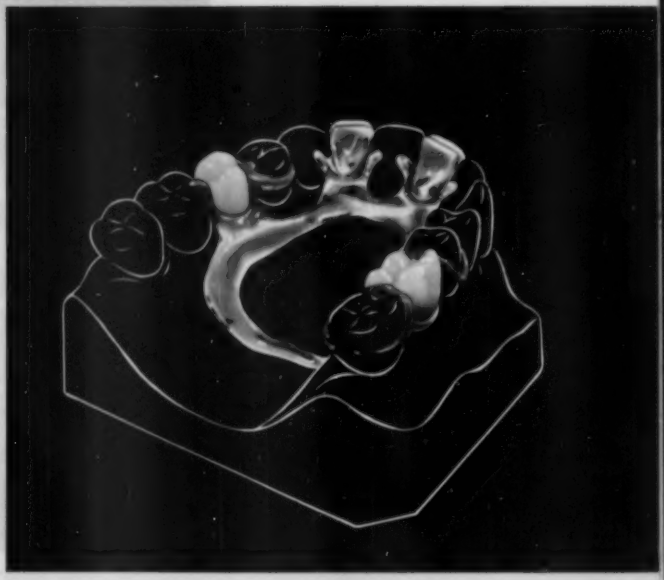

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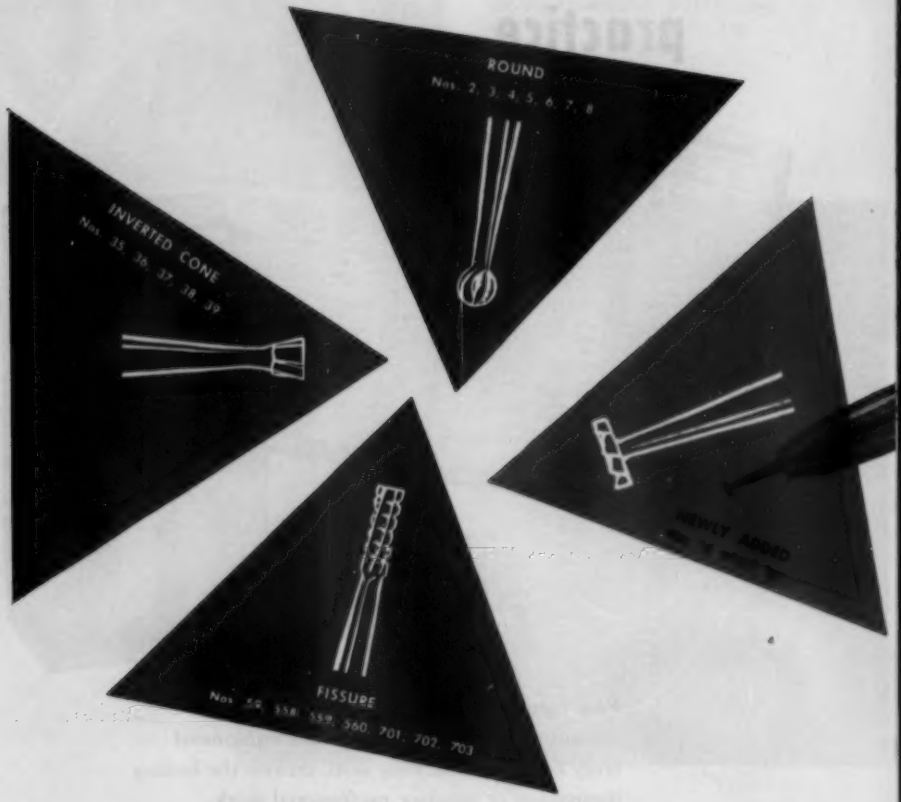

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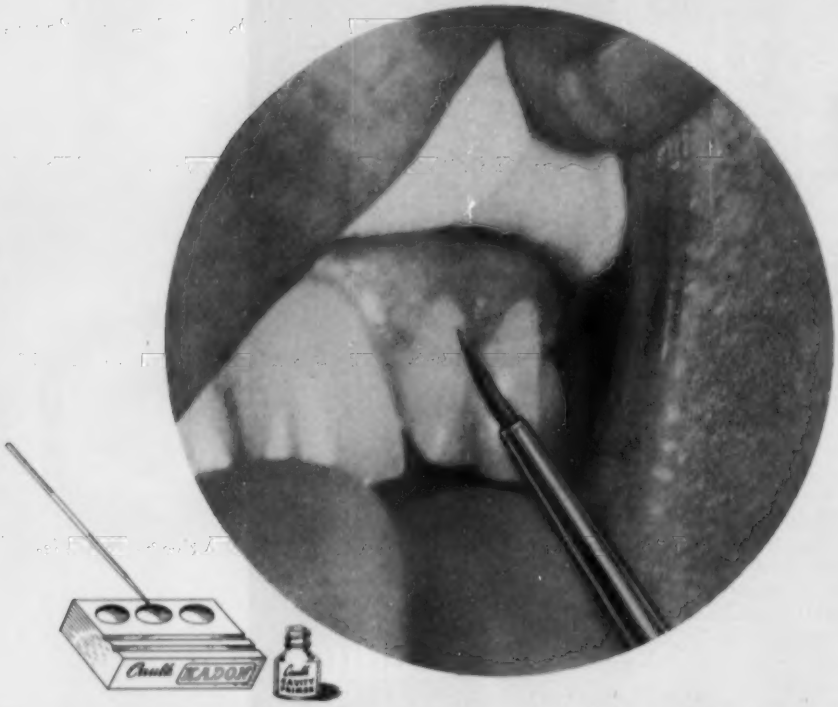

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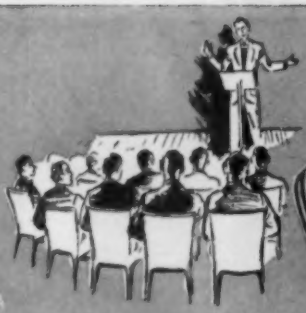

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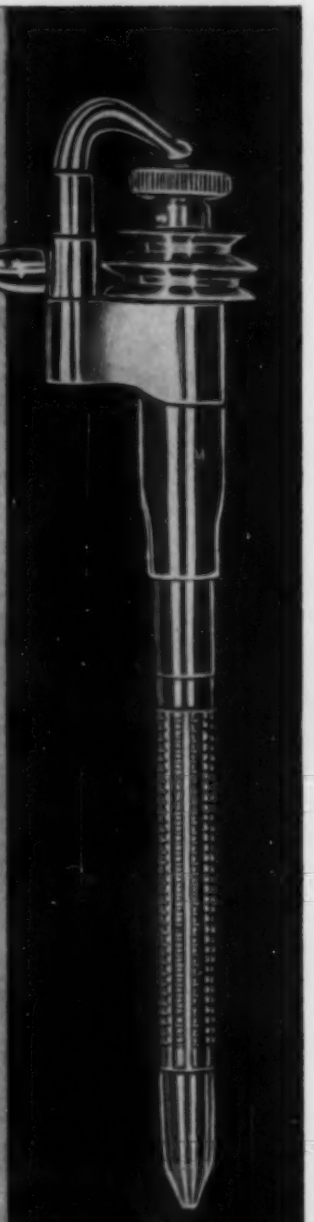

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Gurdjian, E. S., and Webster, J. E., Amer. J. of Surgery, 63:236, 1944.

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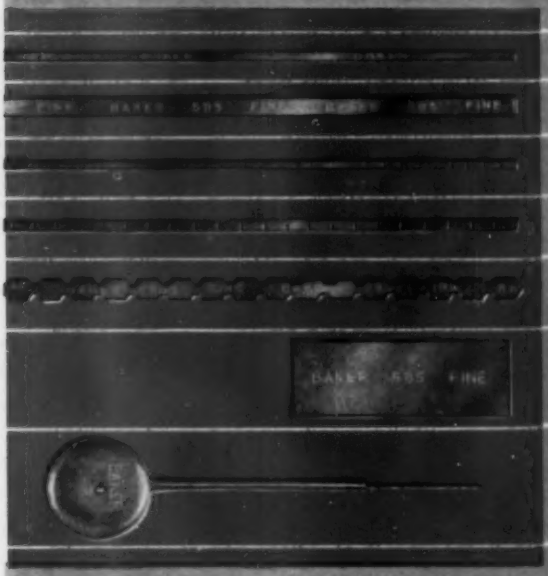

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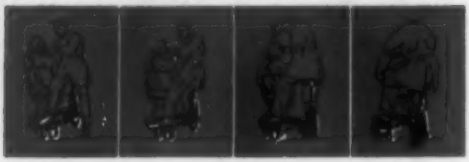

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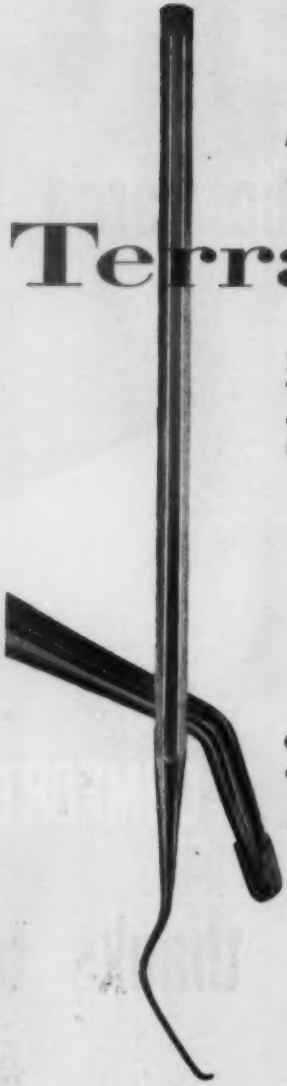

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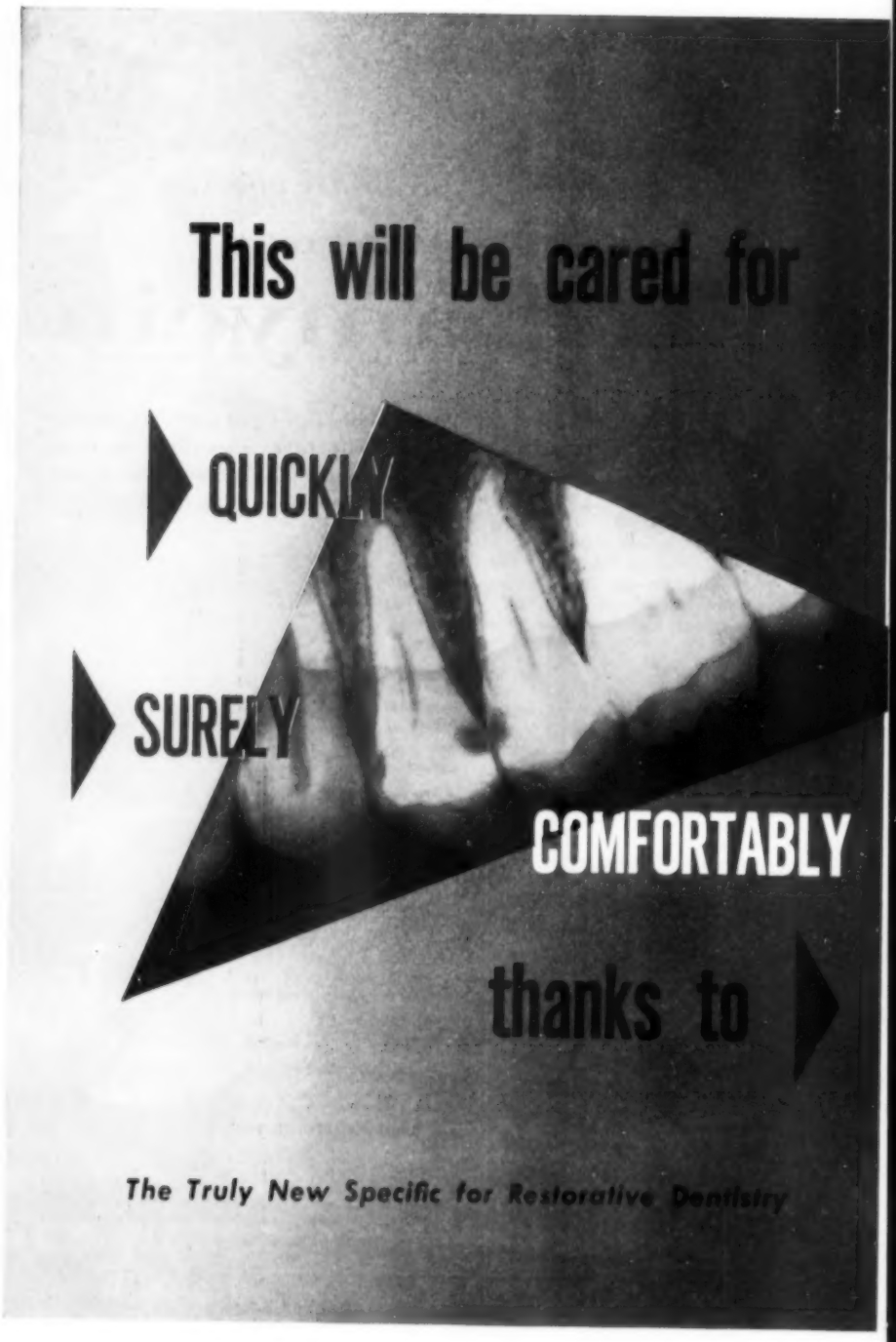
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COMFORTABLY
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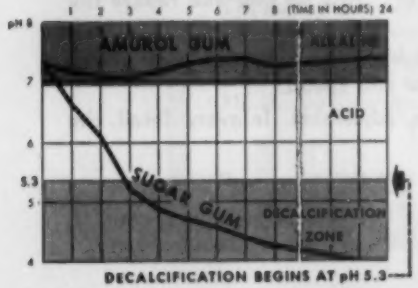
Comparative Effects of Sugar Gum and Amurol Gum on pH of Saliva



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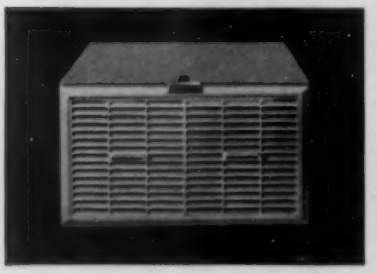

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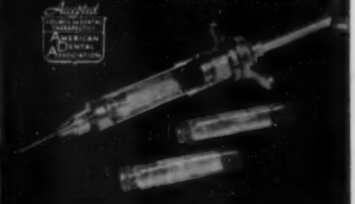

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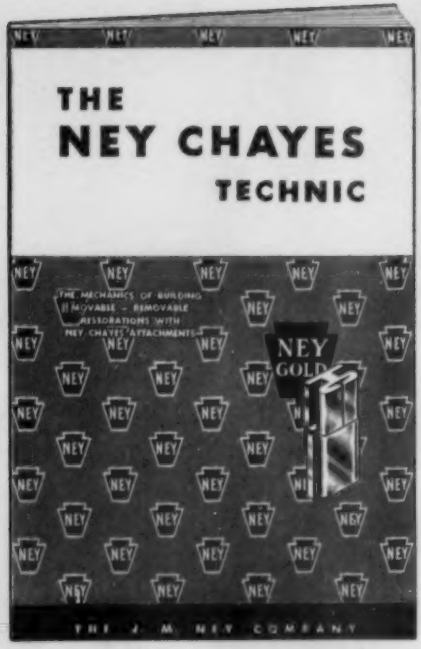

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Speeds the Mastery of the Denture

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MAY 1954

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• • •

Dental journals preserve the living record of dentistry in the making. Yet journals themselves die. Among those in the English language that are no longer published, but whose volumes contain valuable reference material, are: The American Journal of Dental Science (1839-1860); Dental Register (1847-1923); Dental Review (1886-1918); Journal of the Allied Dental Societies (1906-1918); and Dental Cosmos (1859-1936).

• • •

It seems incredible, that it should ever have been considered expedient to expect large numbers of men to forego the availability of dental service for long periods of time—as for instance armies in field. Yet it wasn't until World War I that the practical value of military dentistry began to win recognition, leading one army surgeon to remark, "I will never go to war again without a dentist!"

• • •

The possibility of hearing through the teeth was first suggested about 1550 by Hieronymus Cardanus, a physician of Pavia. His theory that sound could be conducted to the brain via a stick of hard wood held firmly between the teeth was used by Beethoven, when he tried out his compositions on the piano. In 1928, a U.S. patent was granted to J. M. Cone for his dentiphone, which conveyed sound through a metal rod to the teeth; but this avenue of research has been superceded by modern electro-acoustic instruments.

• • •

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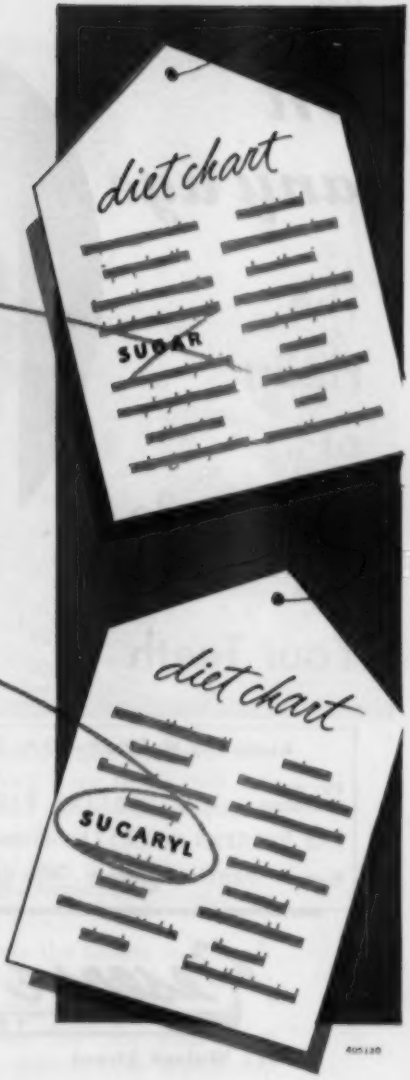
when *Sugar*
must come out

put *Sweetness*
back in



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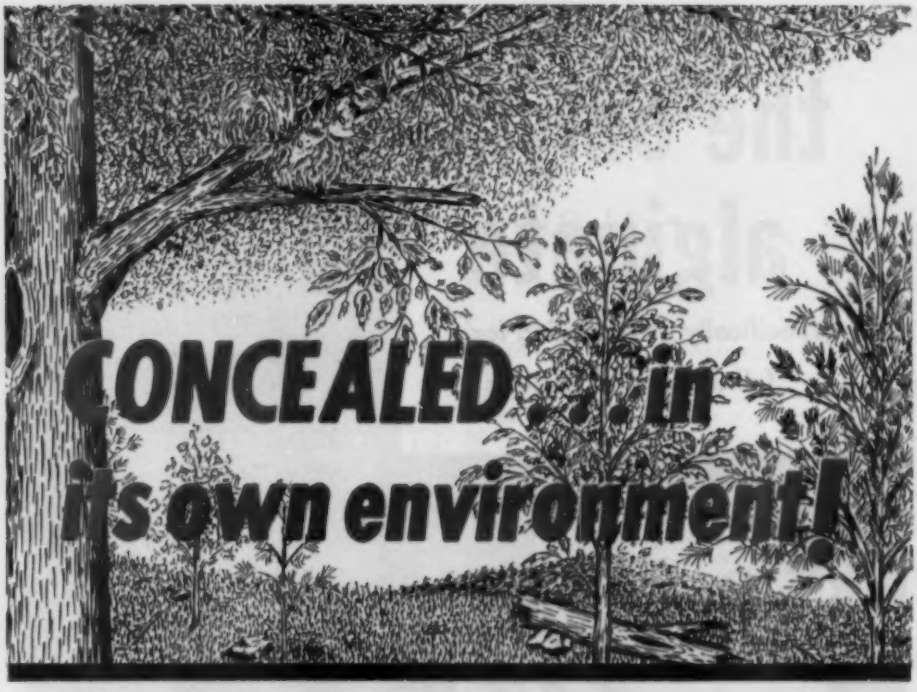

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INDEX TO ADVERTISEMENTS

May 1954

Abbott Laboratories.....A-52, A-71
American Cabinet Co., The.....A-43
American Dental Association
1954 Accepted Dental Remedies.....A-67
1954 Directory.....A-27
Film Library.....A-25
Hotel Reservation Application.....A-29, A-30, A-31
Miami in 1954.....A-16, A-19
Toothbrushing Pamphlet.....A-38
Amurol Products Co.....A-62
Ash, Sons & Co., Claudius.....A-2
Astra Pharmaceutical Products Co., Inc.....A-4, A-5
Austenal Laboratories, Inc...A-48, A-49, A-55

Baker & Co., Inc.....A-53
Bi-Po Company.....A-32
Bristol-Myers Co.....A-22
Brownell Travel Bureau, Inc.....A-19
Burton Manufacturing Co.....A-36

Caulk Co., L. D.....A-50, A-60
Cetylite Industries, Inc.....A-39
Chayes Dental Instrument Corp.....A-51
Church & Dwight Co., Inc.....A-10
Classified Advertising.....A-40, A-41, A-42
Coe Laboratories, Inc.....A-18
Coles Corporation.....A-19
Columbus Dental Mfg. Co.....A-11
Colwell Publishing Co.....A-62
Cook-Waite Laboratories, Inc.....A-58, A-59
Corega Chemical Co.....A-47
Cosmos Dental Products, Inc.....A-73
Crescent Dental Mfg. Co.....A-37

Dental Gold Institute, Inc.....A-12
Dental Perfection Co.....A-74
Dentists' Supply Co. of New York, The.....2nd Cover, 4th Cover
Du Pont DeNemours & Co., Inc., E. I...A-35

Fédération Dentaire Internationale.....A-17
Florida Citrus Commission.....A-13

Gesner, Inc., M. A.....A-20
Gomco Surgical Mfg. Corp.....A-8

Handy & Harman.....A-1

International Dental Journal.....A-17
Invincible Metal Furniture Co.....A-32

Jelenko & Co., J. F.....A-38
Johnson & Johnson.....A-14

Kerr Manufacturing Co.....A-61

Lauer Metal Shop.....A-42
Lederle Laboratories.....A-7

Medical Protective Co.....A-36
Merck & Co., Inc.....A-54
Missionary Dentist, The.....A-36
Mosby Co., C. V.....A-23

National Dairy Council.....A-15
Ney Co., The J. M.....A-66
Novocol Chemical Mfg. Co., Inc.....A-64

Odontographic Mfg. Co.....A-9
Oral B Company.....A-24

Pelton & Crane Co.....A-34
Pfingst & Co., Inc.....A-65
Pfizer Laboratories, Div. of Chas. Pfizer & Co., Inc.....A-57
Physicians Casualty & Health Association.....A-32
Professional Budget Plan.....A-3
Professional Printing Co.....A-25

Ransom & Randolph Co., The.....A-6
Reserve Plan, Inc.....A-72
Rinn X-Ray Products, Inc.....A-28
Ritter Co., Inc.....A-46
Rower Dental Mfg. Corp.....A-38

Servel, Inc.....A-63
Sharp & Dohme.....A-33
Squibb & Sons, E. R., Division of Mathieson Chemical Corp.....A-26

Ticonium A-21

Union Broach Co., Inc.....A-36
U. S. Air Force.....A-70

Warren Laboratories.....A-42 Insert
Weber Dental Mfg. Co.....A-56
Wernet Dental Mfg. Co., Inc.....A-68, A-69
White Dental Mfg. Co., The S. S.....A-44, A-45

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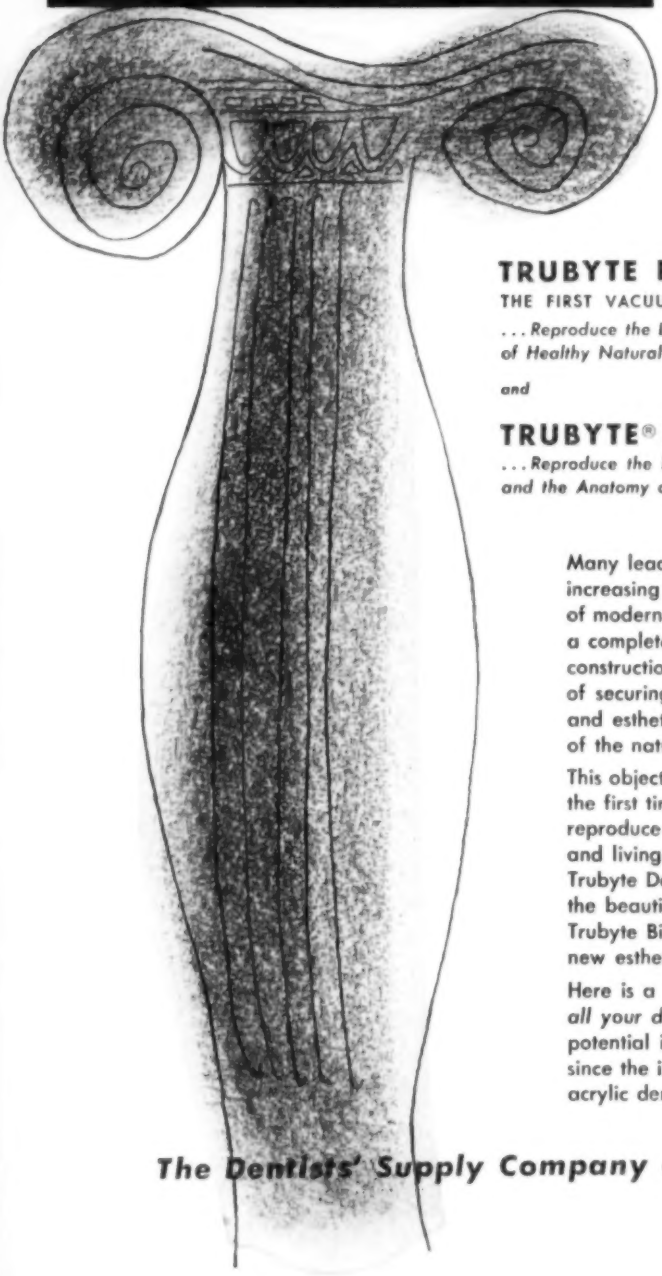

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